

EDITORIAL**Curriculum Analysis using Harden's 10 questions framework: Case study Faculty of Medicine and Health Sciences, University of El Imam EL Mahadi (2018)**

Mohammed Eltoum Hamed Azoz¹, Moataz Alhasan Ali², Nour eldin Eltahir Fadl ella³, Sakina Salih Amed Baloul⁴

1. Associate professor, department of surgery, Faculty of Medicine and Health Sciences, University of Alimam Almahadi, Kosti – Sudan.
2. Associate professor, department of pathology, Faculty of Medicine and Health Sciences, University of Alimam Almahadi, Kosti – Sudan.
3. Associate professor of public health, Faculty of Public Health, University of Alimam Almahadi, Kosti – Sudan.
4. Consultant paediatrician, Kosti Teaching Hospital, Kosti – Sudan.

Correspondence: Mohammed Eltoum Hamed Azoz MD, F.MAS. Associate professor, department of surgery, Faculty of Medicine and Health Sciences, University of Alimam Almahadi. General director of *Abdala Mohamed Salih Specialized Centre*. Head department of Gastrointestinal Endoscopic Unit, Kosti Teaching Hospital, Kosti, White Nile State, Sudan, P.O.Box 209, Tel: +249912247390. E. mail: mohammedazoz61@hotmail.com

Abstract:

Introduction: Curriculum analysis is defined as unpacking a curriculum into its component parts, evaluating how the parts fit together, checking underlying beliefs and assumptions and seeking justification for curriculum choices and assumptions.

Methods: This is a qualitative descriptive study analyzing the undergraduate curriculum of Faculty of Medicine and Health Sciences, University of El Imam El Mahdi by adopting Harden's 10 Questions of curriculum development framework approach. Answering Harden's questions reflects the fundamental curricular components and how the different aspects of a curriculum framework fit together.

Results: The analysis of the curriculum of Faculty of Medicine and Health Sciences, University of El Imam El Mahdi reveals a curriculum with interactive components. Clear structured objectives and goals reflect the faculty's vision. The approach for needs assessment is based on a scientific ground, and the curriculum integrated contents have been set to meet national and international requirements. Adopting SPICES strategies helps the faculty and students achieve the objectives of the curriculum. Different motivated instructional methods are adopted compatible with the program objectives and outcomes. A wide range of assessment methods has been adopted correctly and reliably, and in alignment with the intended outcomes to assess the learning outcomes of the curriculum. The Faculty of Medicine and Health Sciences, University of El Imam El Mahdi has a favorable educational environment for operation of its curriculum and it has also a well-defined policy for curriculum management, monitoring and evaluation.

Conclusion: Harden's 10 questions are satisfactorily addressed by the multi-discipline and well developed, well-structured, and integrated curriculum of the Faculty of Medicine and

EDITORIAL

Health Sciences, University of El Imam El Mahdi. The curriculum supports the mission and objectives of the faculty.

Keywords:

Curriculum , Harden's 10 questions, Faculty of Medicine and Health Sciences, University of El Imam El Mahdi

Introduction:

As The Sudan Medical Council (SMC) had been awarded recognition status by the World Federation for Medical Education(WFME), and it is the tenth agency in the world and the first in Africa and Middle East to have this recognition; it is a high time for every medical school staff in Sudan to review their school's curriculum and prepare for accreditation for their school by Sudan Medical Council (SMC).

Curriculum analysis is defined as unpacking a curriculum into its component parts (e.g. learning, teaching, knowledge, society, and resources,..ect); evaluating how the parts fit together, checking underlying beliefs and assumptions and seeking justification for curriculum choices and assumptions⁽¹⁾. Curriculum analysis is an important task to detect the validity of assumptions behind the curriculum and to assess its perspectives, goals and objectives⁽²⁾. Curriculum analysis is a useful tool that can be utilized to evaluate how the different parts of the curriculum fit together in terms of focus and coherence, checking the underlying beliefs and assumptions validity. Also, it is an important step taken by most of the medical schools in seeking justification for curriculum choices and assumptions⁽³⁾. On the other side, curriculum development involves building and packing the curriculum in order to present a coherent plan⁽³⁾. Bandaranayake(1985) has suggested that a prerequisite to quality and relevance is a sound curriculum plan which follows a sequence of logical steps based on accepted educational principles⁽⁴⁾.

In medical education, much attention has been paid to curriculum development⁽⁵⁾. Emphasis has been placed on educational strategies such as student-centered learning, problem-based learning, integrated teaching and community-based teaching⁽⁶⁾.

Different studies carried out in 21st century pointed out the challenges faced by health professionals education which range from curriculum design, teaching and learning methods, assessment, faculty development with addition of some new issues such as internationalization of health professional education, digitalization, professionalization and social accountability of the health institutes⁽⁷⁾.

In the past, the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi applied a traditional form of curriculum. With the appearance of medical education innovations and after vigorous curriculum evaluation through a work shop in which contributed the most pioneers in medical education from different medical schools in Sudan (in the year 2006). The faculty of medicine adopted a new type of curriculum describing the faculty as community oriented and problem based medical college.

The aims: The aims of this study were to describe the curriculum of the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi medical curriculum in

EDITORIAL

terms of Harden’s 10 questions of curriculum development and to see how it responded to these questions and to offer some help to others who are in the position to review, revise or develop a new curriculum.

Methods:

The undergraduate curriculum of Faculty of Medicine and Health Sciences, University of El Imam El Mahdi has been analyzed by using Harden's 10 Questions of curriculum development framework approach(table1)⁽⁵⁾ which is a qualitative and descriptive analysis. This practical tool for approaching curriculum development was proposed in 1986 by Harden in Dundee University in Scotland. Harden’s Ten Questions has been used in many universities worldwide due to its optimal validity and reliability^(8,9).

Harden’s Ten Questions provide a comprehensive framework for curriculum development. Also it is an effective method for planning a course or curriculum, and evaluating the course in a systematic way. A well developed curriculum must address Harden’s 10 questions during its developmental phase^(5,8).

Undergraduate curriculum of Faculty of Medicine and Health Sciences, University of El Imam El Mahdi has been evaluated in terms of needs assessment, objectives, content, content organization, educational strategies, teaching methods, assessment methods, educational environment implementation and curriculum management by exploring and analyzing the official curriculum document ⁽¹⁰⁾.

Table (1): Harden's 10 questions of curriculum development framework.

Ten questions to be asked when planning a course or a curriculum⁵.
1. What are the needs in relation to the product of the training program?
2. What are the aims and objectives?
3. What content should be included?
4. How should the content be organized?
5. What educational strategies should be adopted?
6. What teaching methods should be used?
7. How should assessment be carried out?
8. How should details of the curriculum be communicated?
9. What educational environment or climate should be fostered?
10. How should the process be managed?

Results:

Applying Harden’s questions to the curriculum of the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi

1-What are the needs in relation to the product of the training program?

According to Sudan census at 2008 numerated population of white Nile state as 1,730,588⁽¹¹⁾. The area where the college was established near crossroads with bringing travelers' an

EDITORIAL

ethnic and cultural diversity .The dynamic travelling and immigration specially from southern Sudan , laborers recruitment from different areas of Sudan to work in the state agricultural schemes and national sugar companies, the wide spread of a lot of higher school all over the state, the wishes of the families concerning the study of medicine by their sons, high cost to families when their sons study medicine outside the state and the presence of many endemic and epidemic diseases and other local health problems necessitate an establishment of medical college having a community oriented and community based curriculum design to cope with community health issues and problems solving through a competent and well trained graduates⁽¹⁰⁾.

2. What are the aims and objectives?

Mission and aims are ⁽¹⁰⁾: (Table 2)

- To participate in the development of health profession education and practice, scientific research and community health services at an individual and social level.
- To graduate competent doctors who are able to solve health problems, and improve the health system
- To provide solutions to health related problems, through sharing experience regarding education, scientific research and health policies with local, regional and international bodies.
- To align the medical ethics to cultures and values of community

Faculty objectives:(Table 2)

1. To teach and train medical students and to graduate a highly qualified and competent medical practitioner.
 2. To conduct scientific researches meeting the community needs.
 3. To participate in provision of health services at the individual, family and community levels.
 4. To prepare a graduate able to conduct researches and continue learning after graduation.
 5. To Participate in community development.
 6. To consider medical ethics and patients confidentiality.
 7. Diagnose and treat endemic and epidemic diseases and all the health problems at the level of the individual, family and the community.
- Further detailed objectives and competencies are properly written representing the three domains of learning in sense of knowledge, skills and attitudes.

3and4-What contents are included and how are they organized?:

The faculty awards a five-year MBBS through an integrated program which is divided arbitrary in to three educational phases with a curriculum covering 39 courses. Each Phase has different courses, each of which is having its learning objectives and contents.

- Phase one (semester 1-2) comprises social, behavioral, basic sciences with the introduction of relevant clinical sciences.

EDITORIAL

- phase two (semester 3-6) consists of system courses. In each course, the basic science is integrated(both vertically and horizontally) with relevant clinical science. The course contents includes anatomy ,physiology, biochemistry ,microbiology ,pathology, pharmacology with increasing share of clinical sciences and behavioral sciences (formal curriculum).
- phase three (semester 7-10) comprises major and minor clinical disciplines(the courses are mainly clinical and knowledge applied to practice) in addition to forensic medicine.

The content is integrated both horizontally and vertically which links the theory to practice, increasing the time for clinical activities and allowing students to spend more time with patients, so they can apply their theoretical knowledge into clinical practice.

5. What educational strategies are adopted?

The main educational strategies mentioned in curriculum document were:

- Community orientation
- Community-based education
- Integration of basic, clinical, community and behavioral sciences
- Problem based learning
- Continuous lifelong Self-directed and peer learning

The school adopted a mix approach with emphasis on the SPICES strategy in its curriculum implementation.

6. What teaching methods are used?

Several instructional methods are used to achieve the educational objectives. These include:

- Lectures
- Seminars
- Small group discussion
- Field visits (villages)
- Family visits
- Training in health centers
- Training in rural hospitals
- PBL
- Tutorials
- Practical (laboratory, basic skill laboratory, bedside teaching in hospitals)
- Self-directed learning.

Student grouping

the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi adopted a combination of whole class teaching and small group teaching.

Multiple educational tools were used and recently there is increasing use of learning technologies.

EDITORIAL

These instructional methods ensure student-centered learning and help in preparing the students for lifelong self-directed learning.

7. How is the assessment carried out?

Student assessment:

The tools of assessment differ from one phase to another to assess the learning outcomes of the curriculum correctly and reliably. The assessment is objective based on covering the three domains of learning. In general, the tools of evaluation used are: Short answer questions, one correct answer, best of five, Multiple Choice Questions (MCQs), Extended Matching Questions (EMQS), problems solving, short notes, essays, Clinical, OSCE, Practical exam, Log book, Attendance, Performance, Student's Product report, oral exam and Peer evaluation.

More than one instrument is always needed to evaluate a learning activity and most of the evaluation methods used are a normo-referenced assessment. The balance between the written and the practical examination depends on the nature of objectives of the course. The use of external examiners (from other schools of medicine) in Phase III final clinical examination ensures an accepted level of student competency in relation to students in other schools. There is representative of the Sudan Medical Council who reports on whole final exam and a copy of his report send to the Sudan Medical council.

Program evaluation:

The program is continuously monitored by students' feedback, coordinators and staff feedback, examiners' reports and external examiners' reports.

8. How are details of the curriculum communicated?

The curriculum details are communicated in a coordinated chain of operations to many stakeholders mainly (the course conduction staff and students) and this is done through a pre course syllabus and timetable including the course objectives and contents, teaching methods and reading resources by the course organizer whom is selected by the involved departments.

9. What educational environment is fostered?

The educational environment is to some extent suitable encouraging cooperative environment between staff themselves (the preclinical staff in faculty building and the clinical staff in hospital) and students, in a manner positively affecting productivity for all to fulfill the curriculum objectives.

The educational environment enhance student's engagement, motivation and it is relevant to the student's future. All the lecture rooms has comfortable seats, audiovisual tools and not all the lecture rooms has cooling system. Our school had comfortable timetables for the students and the teachers, the starting and ending times for the semester and course were stated before the semester or the course start. Our school hadn't well established student's supporting system which help the students who had academic or social problems. The students had many societies some of it had academic activities, some had cultural activities and some provide help and aids to the patient.

EDITORIAL

10. How is the process managed?

The whole educational process is managed by the university senate, Faculty dean, faculty board, curriculum committee and course committee. The course committee is responsible for the details of the timetable and the implementation of the program. Each course has an organizer from the staff and coordinator from the students. There is a curriculum committee responsible for establishing and deciding policy in relation to the curriculum but major curriculum changes are subject to the approval of faculty Board and University Senate.

Discussion:

Currently there are vast developments and research in medical education. Recent trends in medical education reflect major shifts in educational paradigms arising from reappraisals of the relevance and the effectiveness of conventional medical education in the context of fast changing, complex and ever increasing demands on the health care delivery system, including changing patterns of the diseases. In order to meet the healthcare needs of the local and global societies, medical educators continue to evaluate and introduce innovations into their curricula aiming to achieve appropriate outcomes for their graduates^(12,13).

When curriculum analysis follows a systemic approach to provide high quality evidence of that, it integrates a content area with educational theory and methodology. The strength of this study is that analysis was performed on the basis of Harden 10 questions, which is very well structured and conceptualized^(8,9). This study demonstrated the applicability of this approach to curriculum analysis in setting an innovative medical curriculum.

The study described the curriculum of the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi as a community-oriented and community-based, student-centered, problem-based, and integrated learning program (SPICES model). An evidence base for effectiveness of this approach is emerging to accumulate rapidly⁽¹⁴⁾. The success of this curriculum is reflected by the fact that many regional medical schools adopt the same pattern of the curriculum⁽¹⁵⁾. Therefore the active learning strategies may be more beneficial than the conventional teaching methods. This curriculum supports the active learning strategies which encourage critical thinking and improve problem solving and decision making skills among the students. The traditional curriculum is not well accepted by the students, as it does not prepare doctors to meet the needs of the community they will be serving⁽¹⁶⁾. The need for greater integration of subjects in the medical curriculum has featured prominently in many reports on medical education including the General Professional Education of the Physicians (GPEP) report,⁽¹⁷⁾ 'Educating Medical Students, the report of the Association of American Medical Colleges Assessing Change in Medical Education--The Road to Implementation (ACME-TRI) project⁽¹⁸⁾ and Tomorrow's Doctors, the recommendations of the General Medical Council in the UK⁽¹⁹⁾. Integrated teaching offers many advantages⁽⁶⁾ and may be a key factor in the delivery of an effective educational program⁽²⁰⁾.

EDITORIAL

Conclusion:

Harden’s 10 questions are satisfactory addressed by the multi-discipline and well developed, well-structured, and integrated curriculum of the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi. The curriculum supports the mission and objectives of the faculty.

The curriculum features a community oriented, problem-solving approach using an integrated, block system of education. It also blends with the existing health care delivery system and with the community around it and adopts team-work as a basic strategy.

Implementation of such curriculum with the continuous monitoring and periodic program evaluation lead to efficient outcome graduates.

Understanding of curriculum components by teachers, students and administration of medical school can lead to effective and efficient education.

Curriculum analysis helps to raise the level of discussion and reflection about the curriculum and resource allocation.

Recommendations:

- Rewriting and classifying the objectives of the faculty of medicine according to the three domains of the learning (knowledge, skills and attitude).
- Introduction of new concepts in teaching like interprofesstional education and professionalism in the curriculum of the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi.
- Regular evaluation and upgrading of the curriculum in order to fill the gaps on it.
- Introduction of new tools of the student's assessment like **Multisource(360-Degree)** assessments and student's **Portfolios**.

Table (2): Objectives of Faculty of Medicine and Health Sciences, University of El Imam El Mahdi

Field	Objective
General objective	To participate in the development of health profession education and practice, graduate competent doctors and align the medical ethics to cultures and values of community
Specific objectives	
Education	<ul style="list-style-type: none"> • To graduate a highly qualified and competent medical practitioner. • To diagnose and treat endemic and epidemic diseases and all the health problems at the level of the individual, family and the community. • To participate in community development.

EDITORIAL

	<ul style="list-style-type: none"> • To consider medical ethics and patients confidentiality. • To prepare a graduate able to conduct a researches and continue learning after graduation.
Research	<ul style="list-style-type: none"> • To conduct scientific researches meeting the community needs.
Service	<ul style="list-style-type: none"> • To participate in provision of health services at the individual, family and community levels.

References:

1. Jayawickramarajah PT. The Analysis of Medical Curriculum. *Med Teach.* 1987; 9(2):167–78.
2. Posner JG. *Analyzing the curriculum.* 3rd ed. Ohio, USA: McGraw-Hill Humanities Social; 2004. p. 315.
3. Heyman RD. *Analyzing the curriculum.* *Int Rev Educ.* 1981;27(4):449–70.
4. Bandaranayake R C. How to plan a curriculum. *Med Teach.*1985; (7): 7-13.
5. Harden RM. Ten questions to ask when designing a curriculum. *Med Educ.* 1986; 20(4):356–65.
6. Harden, R.M., Sowden, S. & Dunn, W.R. Some educational strategies in curriculum development: the SPICES model, ASME Medical Education Booklet No 18, *Medical Education.*1984(18): 284–297.
7. Harden RM. Trends and the future of post graduate medical education. *BMJ Acad Med.* 2006; 23(10): 798-802.
8. Malik AS, Malik RH. The undergraduate curriculum of Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak in terms of Harden’s 10 questions. *Med Teach.* 2002; 24(6):616–21.
9. Swanwick T. *Understanding Medical Education: Evidence, Theory and Practice* (second edition). UK: Wiley Blackwell,2014.
10. Faculty of medicine curriculum hard copy document. El Imam El Mahdi university (unpublished).
11. Central Bureau of Statistics Republic of Sudan Population and Housing Census 2008. Sudan: White Nile State Publication; 2008.
12. El-Hazmi MA, Haque SM. Curriculum evaluattion: status and options *Med Educ* 1985; 19:48-53.
13. Al-Gendan YM, Al-Sulaiman AA, Al-Faraidy A. Undergraduate curriculum reform in Saudi mediccil schools: which direction to go? *Saudi Med J* 2000; 21:324-6.
14. Das M, Lanphear JH, Ja’afar R. Faculty evaluation of educational strategies in medical schools. *Med Teach.* 2014;16(4):355–61.
15. Ahmed YA , SALMA ALNEEL . Analyzing the curriculum of the faculty of medicine, University of Gezira using Harden’s 10 questions framework. *J Adv Med Educ Prof.* 2017; 5(2):60-66.
16. Khalid A. Bin Abdulrahman. The current status of medical education in the Gulf Cooperation Council countries. *Ann Saudi Med* 2008; 28(2): 83-88.

EDITORIAL

17. Association of American Medical Colleges. Physicians for the Twenty-first Century: Report of the project panel on the General Professional Education of the Physicians and College Preparation for Medicine. *J Med Educ* 1984; 59, Part 2:1-208.
18. Anderson MB, Swanson AG. Educating medical students- the ACME-TRI report with supplements. *Acad Med* 1993; 68 (Suppl.):S1-46.
19. GMC. Tomorrow's Doctors. Recommendations on Undergraduate Medical Curriculum. London: General Medical Council, 1993.
20. Schmidt HG , Machiels-Bongaerts M, Hermans H, Ten Cate TJ, Venekamp R, Boshuizen HPA. The development of diagnostic competence: comparison of a problem-based, an integrated and a conventional medical curriculum. *Acad Med* 1996; 71(6):658-64.