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Research Article

Analysis of the Curriculum of the Faculty of Medicine, University of Kordofan, Sudan: Using Harden's 10 Questions Framework 2022

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Abstract

Background: Curriculum analysis involves unpacking the curriculum into its component parts and evaluating how these parts fit together. The aim of this study is to analyze the curriculum of the Faculty of Medicine, University of Kordofan (FM-UK), Sudan, using Harden's 10 questions of curriculum development framework.

Methods: This is a mixed qualitative and quantitative descriptive purposive study. The qualitative descriptive study is based on documents analysis. All necessary documents of the college were reviewed. Intensive interviews were performed with the leading administration personnel in the College, Regional Ministry of Health, Teaching Hospital and Community Leaders. Focus Group Discussions were conducted separately for representatives of the students and representatives of the nonacademic staff. Thematic analysis was then used to categorize the findings. This quantitative study used a self-administered questionnaire for fifth-year students' perceptions of the educational environment including Likert scale and open-ended questions. The quantitative data were analyzed using SPSS.

Results: The curriculum is built to meet the needs of the local community. The objectives are clear, and the content is adequate. The educational strategies, teaching methods, student assessment, and study organization need to be updated. There are deficiencies in the learning environment, delivery of the curriculum, and how it is communicated.

Conclusion: Harden's 10 questions are all addressed by the curriculum of the FM-UK. There is a need for establishment of the school in this community and the curriculum supports the mission and objectives. There are areas identified for improvement.

Keywords: curriculum analysis, Harden's 10 Questions, Faculty of Medicine, University of Kordofan

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1. Introduction

The term "curriculum" is defined in the *Oxford Dictionary* as "the subjects comprising a course of study in a school or college [1]," which suggests an emphasis on the content, whereas learning may depend significantly on how the content is delivered, learned, and assessed. It is the statement of the intended aims and objectives, content, experiences, outcomes, and processes of an educational program including a description of the training structure, methods of learning, teaching, and assessment.

Today, in medical schools, the curriculum is a plan on which any educational program is built and expected to identify and define what competencies, skills, values, and attitudes a medical graduate needs to possess to practice safely, effectively, and efficiently in the twenty-first century. Health professional graduates especially doctors need not just be competent but also locally relevant to the community they are meant to serve [2].

The curriculum exists at three levels: *what is planned* for the students, *what is delivered* to the students, and *what the students experience* [3]. Although, in many medical schools based in developing countries, there exists a modern competency-based well-written curricula with clear vision, mission, aims, and objectives, the implementation is often undertaken by medical specialists with little or no educational training. They are pretty busy with formal and private clinical commitments that *the curriculum in action* is far different from *the written* document.

Curriculum analysis is defined as unpacking a curriculum into its component parts evaluating how these parts fit together, checking underlying beliefs and assumptions, and seeking justification for curriculum choices and assumptions [4]. Similar studies were performed in Sudanese [4, 5] and other regional universities [2], using Harden's 10 questions development framework which offers a qualitative descriptive analysis [4, 5]. The process involves documentary evidence in the form of materials such as syllabi, objectives, learning experiences, textbooks, and empirical evidence in the form of observation of the *functional curriculum* in the school, the training clinical settings, and the hosting community.

The Faculty of Medicine, University of Kordofan (FM-UK) was inaugurated in February 1991 as a public governmental institute adopting a traditional curriculum. It offers six-year undergraduate study which is further subdivided into 12 system-based and teacher-centered semesters. Previous curriculum review efforts were performed in 1998, 2002, and 2010; however, no structured evaluation study was done.

The aim of this study is to investigate this experience by analyzing the curriculum and the implementations of its component parts to explore the strengths, weaknesses, and identify possible and applicable suggestions for improvement.

2. Material and Methods

2.1. Study design

This is a mixed qualitative descriptive and quantitative cross-sectional study. Analysis of the curriculum of the FM-UK is performed using Harden's 10 questions of curriculum framework (Table 1).

TABLE 1: Harden's 10 questions of curriculum development framework.

Ten questions to be asked when planning a course or a curriculum [4, 5].
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?

2.2. Study area

This study was conducted at the premises of the Faculty of Medicine located in El Obeid City which is the capital of North Kordofan State, Sudan, however, some data were collected from the Regional Ministry of Health and the main teaching hospital.

2.3. Population and sampling

The study population comprises medical students, academic administrators in the medical school, and nonacademic supportive staff. It also includes the administrators of the Regional Ministry of Health, the main teaching hospital and the community leaders.

Purposive selection was performed for qualitative samples, and all fifth-year medical students were approached to participate in the learning environment survey. The purposive sampling strategy was adopted to allow the inclusion of key individuals and groups from the college administration, staff, and stakeholders who had experience with the college's educational practices and environment. The possibility of encountering research bias resulting from the use of the non-probability sampling was taken into consideration and efforts to minimize it included the representation of various related groups in the study.

2.4. Data collection and management

Data collection for the qualitative part of the study is based on analysis of all college's necessary documents. Intensive interviews were performed with the leading administration personnel in the college, regional Ministry of Health, teaching hospital, and community leaders who are members of the Faculty Board. Focus group discussions were conducted separately for representatives of the students and representatives of the nonacademic staff. Checklists were used to obtain information from the secondary data sources that included the curriculum document, curriculum map, and its implementation tables, administration documents, students' results and external examiner's reports, graduate information from the Dean's office, academic records, and the university official website. These checklists are designed to ease the scoring and calculation of the resulting values in each question. Triangulation and multiple sources of data were applied to ensure internal validity.

The quantitative part involves data collection using a self-administered questionnaire that was

distributed to all fifth-year medical students to evaluate their perceptions of the college's educational environment with a response rate of 90.7%. It is designed based on the Dundee Ready Education Environment Measure (DREEM) tool for analysis of the educational environment. The questionnaire includes 50 items, evaluated using a five-points Likert scale with scores ranging from 0 to 4, 0 = strongly disagree, 1 = disagree, 2 = Neutral, 3 = Agree, and 4 = Strongly agree. Nine negative questions were scored inversely which were questions 4, 8, 9, 17, 25, 35, 39, 48, and 50. The items were distributed along the five subsections for each of the study variables; the perception of learning (12 items), the perception of teachers (11 items), the academic self-perception

(8 items), the perception of atmosphere (12 items), and the perception of social self-perception (7 items).

Quantitative data entry and analysis was done using the SPSS version 25. Thematic analysis was used to categorize the qualitative findings.

3. Results

To date, 2622 students have graduated from this medical school, 1083 males (41%) and 1539 females (59%). Figure **1** shows the distribution of the graduates between the 24 graduate batches.
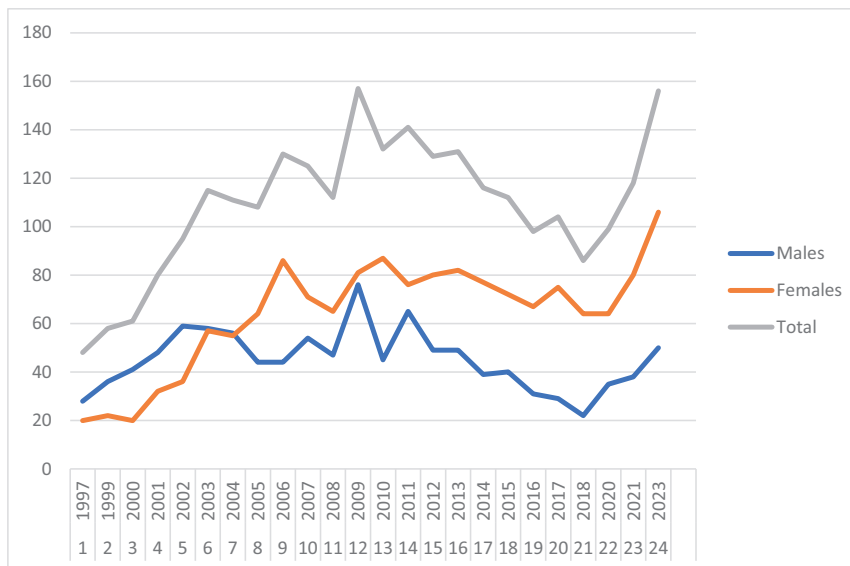

Figure 1: Distribution of graduates by gender (1997–2023).

The results of our curriculum analysis are presented below following the sequence of Harden's 10 questions.

Q1: What are the needs in relation to the product of the training program?

The medical school has been established in a densely populated area (4 million approx.),

about 600 km from the capital of the country. The local community is that of rural traditional farmers and nomads within areas of conflicts, withdrawal, and displacement. The society suffers endemic and infectious diseases, in addition to noncommunicable diseases like malnutrition, goiter, diabetes mellitus, hypertension, cancer, cardiac, and hepatorenal disorders.

Q2: What are the aims and objectives?

Type/ Domain	Objective statement
General objectives	To produce *life-long learners* in medicine who are *able to continue professional development*. To qualify graduates able to *contribute in solving community health problems*. To produce medical professionals *able to conduct scientific research* and solve community health problems while collaborating with other researchers. To generate health personnel *able to work together as a team*. To *adopt evidence-based medical education*, to design, implement, and evaluate educational programs.
Specific objectives	
Knowledge	Describe the basic structure, function, growth, and development of human body. Describe and explain the mechanisms of disease. Interpret and integrate history and physical examinations and select the appropriate and cost-effective diagnostic procedures to manage different health problems properly. Select the appropriate diagnostic and laboratory tests. Diagnose, treat, and manage commonly encountered medical, pediatric, surgical, and obstetric emergencies.
Skills	Conduct proper history taking and thorough physical examination. Perform basic clinical procedures. Conduct basic scientific research.
Attitudes	Respect patient's needs and privacy, and appreciate the diversity of patients' cultural background and values professionally. Provide healthcare with fairness. Interact with different members of the medical and health teams. Promote health and prevent disease effectively. Select and refer difficult problems that exceed his/her professional capabilities. Communicate with patients, families, and community members effectively.

Q3: What content should be included?

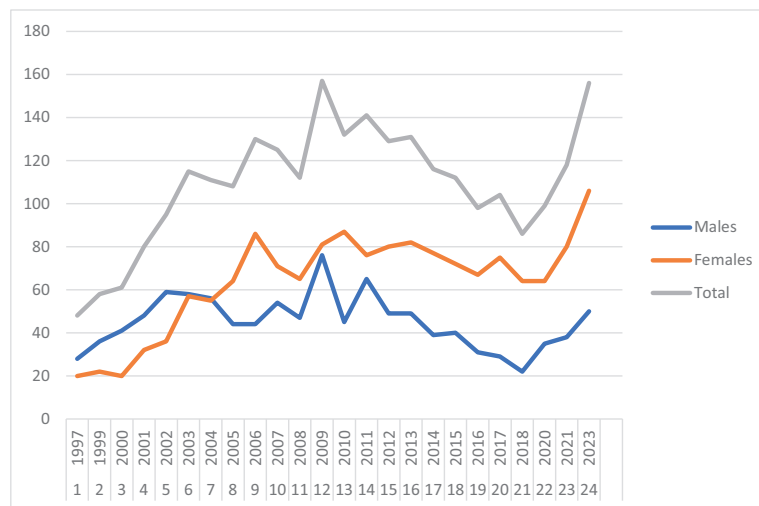The Medical School Tentative Curriculum Map is shown in Figure **2** below:

Figure 2: FM-UK tentative curriculum map.

Q4: How should the content be organized?

The curriculum is structured and organized into 12 semesters for six academic years. It is further subdivided into four phases:

Phase 1: Semester 1

Phase 2: Semesters 2–5

Phase 3: Semesters 6–8

Phase 4: Semesters 9–12

Resources for implementation:

Physical resources: There are adequate lecture rooms, skills laboratory, and library, but no auditorium, small group rooms, or simulation center. The internet coverage is available most of the time, barring the power failures.

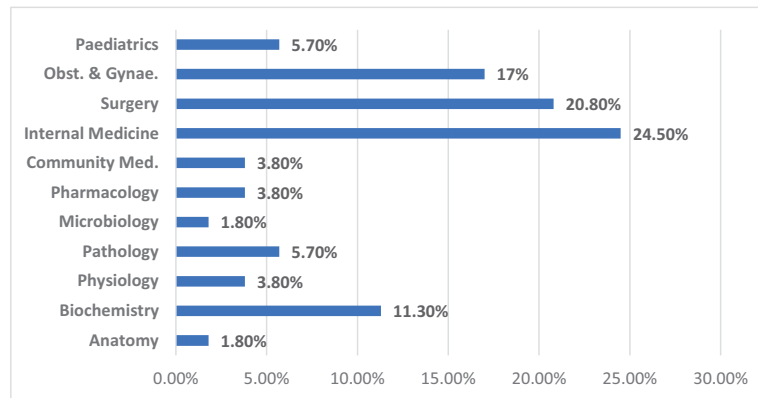Human resources: Full-time academic faculty is hired into all departments.

Figure 3: The distribution of academic faculty by academic departments.

However, part-time teachers are also hired as consultants in various clinical settings by the regional hospital, the police, and military corps. There is an apparent shortage in the faculty of basic sciences. The nonacademic supporting staff is adequate.

Q5: What educational strategies should be adopted?

TABLE 3: The SPICES model [16].

Criteria	L. side	Middle	R. side	Criteria
1. Student-centered			X	Teacher-centered
2. Problem-based			X	Information-gathering
3. Integrated			X	Discipline-based
4. Community-based			X	Hospital-based
5. Electives			X	Standard program
6. Systematic			X	Apprenticeship-based

Q6: What teaching methods should be used?

TABLE 4: Teaching methods.

Teaching methods
Whole class teaching (traditional lecture)
Small groups (11–20)
Teaching tools: Slides and overhead projector teaching aids
Teaching tools: Audiotape, film, and videotape
Teaching tools: Computer PowerPoint projection
Skills lab. models
Practical lab. exercises
Clinico–pathological conferences
Student workshops/seminars

TABLE 2: Continued.

Teaching methods
Case presentations
Clinical patients (outpatient clinics)
Clinical patients (inwards–bedside teaching–clinical rounds)
Clinical patients (emergency room, labor room)
Research and literature search projects

Q7: How should assessment be carried out?

TABLE 3: Student's assessment.

(a) Assessment techniques	
Criteria	**Score**
Blueprinting	1
Essay questions	0
Modified Essay Questions (MEQ)	1
Short Answer Questions (SAQ)	1
Patient management problems	1
Multiple Choice Questions (MCQs)	1
Objective Structural Practical Examinations (OSPE)	1
Objective Structural Clinical Examinations (OSCE)	1
Traditional Clinical Examinations (Long & Short Cases)	1
Item analysis	0
Standard setting	0
Oral examinations	0
Logbooks/Portfolio	0
Reports by tutors or supervisors	1
Reports by internal examiners	1
Reports by external examiners	1
(a) Assessment techniques	
Criteria	**Score**
Internal examiner	1
External examiner	1
(c) Timing:	
Criteria	**Score**
Formative	0
Summative	1

TABLE 3: Continued.

(d) Standards:	
Criteria	**Score**
Norm-referenced	0
Criterion-referenced	0
Total score	14

Yes = 1, No = 0.
If the total score is: (a) <11 = poor quality; (b) 11–15 = acceptable quality; and (c) >15 = good quality.

Q8: How should details of the curriculum be communicated?

Details of the curriculum have to be communicated to *the staff* responsible for teaching and to *the students* for whom the curriculum has been designed.

TABLE 4: Communication of details pertaining to the curriculum.

Criteria	Score
Syllabi and timetables made available to staff and students	1
Curriculum map well designed and widely available	0.5
The student manual (includes the course objectives, contents, teaching/learning methods, and assessment methods)	0
A diagram is made of the relationships of the different subjects and courses	0
All course materials were uploaded to the Learning Management System	0
A session was held at the beginning of each course in which the students were introduced to the course by the course coordinator	0
The students were familiarized with the format of the course, aims and objectives, teaching methods, assessment techniques, and the resources available	0
On each teaching session or presentation, the aims and objectives of the courses were made explicit	1
Total score	2.5

Yes = 1, No = 0.
If the total score is: (a) <4 = poor quality; (b) 4–6 = acceptable quality; and (c) >6 = good quality.

The curriculum committee is responsible for any changes or amendments of the curriculum. However, the curriculum committee suggestions must be endorsed by the Faculty Board and later approved by the University Senate before implementations.

Q9: What educational environment or climate should be fostered?

Interviewing the Dean and Deputy Dean explained many interventions in its way for better implementation of the curriculum including active plans regarding the teaching methods, assessment, and *the educational environment*, with the help of a functioning Educational Development Centre.

Focus group discussions for students' representatives has revealed satisfaction of the current implemented curriculum but drew the attention to the shortness in some physical resources like small rooms, laboratories, and internet coverage and library facilities with shortness in the academic staff in basic sciences. They are much concerned about *the educational environment*. The situation has become worse as the school premises are also hosting students from other newly established public medical schools. The focus group discussions

for nonacademic administrators have reflected their nonsatisfaction about the environment and the available scarce facilities.

Our study which was performed among the fifth-year students has shown the total DREEM mean score of 107.45 ± 17.56, which represents around 53.7% of the maximum DREEM score. Perception of learning (max. 48) was 26.13 ± 5.54, perception of teaching (max. 44) was 26.19 ± 4.64, academic self-perception (max. 32) was 19.03 ± 4.86, perception of atmosphere (max. 48) was 21.31 ± 6.11, and social self-perception (max. 28) was 14.42 ± 3.56.

The percentages of the students' responses distribution have mostly indicated a more positive perception of the overall DREEM score (66.7%), and the main domains of the educational environment; SPL (61.4%), SPT (72.2%), SPA (60.6%), and SPS (53.4%) except for the SPA2 which was viewed negatively by most students (62.7%).

Q10: How should the process be managed?

TABLE 5: Management of the process.

Criteria	Score
The Faculty Board	1
The Dean	1
The Deputy Dean	1
The Curriculum Committee	1
Heads of Departments	1
Phase coordinators	0
Course committees	0
Course organizers	0
Student's academic advisor	0
Student's academic coordinator	1
The Registrar	1
Total	7

Yes = 1, No = 0.
If the total score is: (a) <6 = poor quality; (b) 6–8 = acceptable quality; and (c) >8 = good quality

4. Discussion

In this study the curriculum analysis has followed a systematic approach carried out based on Harden's 10 questions which are documented to provide qualitative, descriptive purposeful analysis and widely used in the development of medical schools [2, 4, 5].

The target community is in great need for the establishment of the medical school to cater for qualification of doctors, contribute for healthcare service, and initiate health research addressing solutions for the local health problems. The school is adopting enrollment of 50% of its intake for regional students in an attempt to graduate locally practicing doctors as it is hoped that some students from the region may wish to stay and practice in the remote underserved areas and respond to the increasing health needs of their local community [6, 7].

The general and specific objectives are well expressed in the curriculum document addressing the domains of *knowledge*, *skills,* and *attitudes* with regards to the specific competencies to be achieved before graduation [8]. The aims and objectives are consistent with the guidelines of the national regulatory bodies in the Ministry of

Higher Education (MOHE) and the Sudan Medical Council (SMC). However, these objectives need to be tuned and expressed in accordance with the global recommendations adopted by the World Federation of Medical Education [9].

Ahmed and Alneel, in their analysis of the curriculum of the Faculty of Medicine, University of Gezira using Harden's 10 questions framework [5], categorized the curriculum content into clinical, health, self-directed lifelong learning, and leadership components. The clinical content of the FM-UK is rich with the basic knowledge, skills and training facilities in all levels of the local healthcare clinical settings. The health content includes health promotion, social and disease prevention measures like vaccination campaigns, family planning, and health education. The leadership content is enhanced by encouragement of students' associations and medical societies in which competencies in teamwork, communication skills, and problem-solving capabilities are developed. "Soft skills" in professionalism, medical ethics, and the extent to which the curriculum encourages friendliness, co-operation, and supportiveness need more emphases. As the content of the curriculum is subject based, being implemented by separate departments, overcrowdings with over representation of some subjects and dissociation between the basic and clinical sciences inevitably occurs [9, 10]. The students in focus group discussions are complaining from shortages in both the human and physical resources, specially the availability of teachers in the basic medical sciences like physiology and anatomy, resulting from the continuous brain drain and failure in faculty retention. The available physical premises are not compatible with the increasing number of students, and the situation was made worse by hosting students from other newly established public universities.

During its development from inception to date, this medical school in the first two decades has had a system-based syllabus executed in six years divided into preclinical and clinical phases. Lack of integration between the preclinical basic science courses and subsequent clinical learning is often known as the "preclinical/clinical divide." The whole content of the syllabus is considered as mandatory and there are no electives. The system is very much on the traditional pattern: lecture-based, teacher-centered, discipline-based, examination-driven, and hospital-oriented. The earlier clinical exposure adopted after the amendments in 2010 is considered beneficial to the student's motivation and help them to understand the relevance of the courses and increase their satisfaction. Awadalla *et al.* found an improvement in the performance of students who studied with the modified curriculum in the final examinations results in physiology and biochemistry (P-value $\leq$ 0.01, both) [11]. Moreover, the performance of students in the final examinations of clinical subjects was better than their performance in the same subjects prior to the amendments (P-value $\leq$ 0.01 in all subjects).

The curriculum map (CM) is the glue that holds the curriculum together and helps manage the learning process by making the roles of the student and that of the teacher more explicit. It determines whether the curriculum meets the specified standards and whether the school's curriculum is congruent with the expected learning outcomes [12]. In a recent evaluation, Wardle et al. found that the medical students felt the CM has been effective in creating transparency around the intended learning outcomes (ILOs), providing all students with a centralized platform to access curricular content [13]. Hence, the CM of this school needs to be continuously updated and be available to the students and faculty at all times.

The curriculum of this medical school is adopting a community-oriented style, but the other educational strategies described in Harden's SPICES model [14] are not observed. An established strategy to achieve this objective is problem-based learning (PBL) which is not yet practiced. PBL is a self-learning strategy in which the student is an active learner instead of a passive recipient. It provides a platform for horizontal and vertical integration of the knowledge, and a valuable tool for early clinical exposure [15]. The "integrated curriculum" model also better promotes the retention of knowledge across the basic and applied clinical sciences [16]. A regional experience from a nearby low-resource African country proves that it can be well implemented in a previously classical traditional curriculum, provided the faculty is committed to change [17]. However, task-based learning is considered as another powerful educational strategy which is effective in the later clinical years of the medical course where other approaches to integration and PBL may run into difficulty [18].

In this study, most of the clinical teaching and learning of the curriculum analyzed is hospital-based standard departmental programs in apprenticeship style. The clinical students are allocated for a rural residency stay of two to three weeks after the tenth semester. Although the students considered the experience as stimulating, very useful, and highly positive, it stands short of the community-based learning in which the students and teachers visit the targeted community settings to study the local health problems and participate in formulating necessary solutions. The community-oriented strategy adopted by this school needs more practical application to comply with other reported experiences [19]. It may proceed to the broader approach of community-based medical education described elsewhere [20] and practiced by much more systematic field training, research and development courses that can be structured in a similar manner like those offered in the medical school at Gezira University, Sudan [21].

The FM-UK offers compulsory academic teaching activities in the form of lectures, small group discussions, seminars, and clinico–pathological conference sessions. The practical sessions include laboratory exercises, skill laboratory demonstrations, dissection rooms and clinical hospital study sessions. Various teaching tools are used like Microsoft PowerPoint presentations, overhead projector slides and videotapes. Peer learning, workshops, and seminars are always encouraged. These are similar to the teaching methods reported from other medical schools locally or from nearby developing countries [4, 5, 16].

Clinical teaching is mainly done in the regional hospital where students rotate between the different clinical departments. They are distributed to emergency rooms, labor room, outpatient clinics, and inwards rounds under the supervision of the university teachers and hospital clinical consultants. This clinical exposure is considered satisfactory, yet efforts should be made to facilitate more learning in district hospitals and primary health clinical settings in the wide community, as described elsewhere [16].

All students must demonstrate satisfactory performance in research projects before the completion of the 10th semester. A greater focus on research within medical school curricula will encourage scholarly research practice among the future physicians and help develop skills necessary to practice evidence-based medicine [22]. It is wise that the academic regulations of this school also mandate that the students must attend physically 80% of the academic activities as prerequisite for them to proceed for the summative assessment of that activity. Adequate attendance recording of the

academic activities is a matter of great importance for the medical students globally, and selection of the most suitable method for recording attendance needs to be done carefully [23].

Student's assessment can provide information on how much students have learned and how far the intended outcomes have been achieved (*i.e., assessment of learning*) or assessment for learning, providing an opportunity to drive learning (*formative*) with emphasis on feedback [24]. The assessment techniques, tools, and criteria used in this medical school are similar to national and regional schools and they are well documented in the curriculum. All inter-phase, end of phase, and final qualifying examinations were attended by external examiners from other universities and representatives for the regulatory body (SMC). The reports of the external examiners are satisfactory, but there is room for improvements in continuous assessment, for application of more valid procedures like standard settings and item analysis, and for the development of performance-based assessments, including the mini-clinical evaluation exercise (mini-CEX) and workplace-based assessments including the entrustable professional activities (EPA) to determine the levels of competency expected from the learners. The use of information technology helps in making data collection, storage, and dissemination more efficient.

The curriculum document and the syllabus map of this medical school are available on the website and relevant updates are made when needed. Announcements for beginning of semesters, various academic activities and assessments are posted in the signboards on regular basis; however, information provided does not explicitly show what shall be taught or how it shall be taught. There are many interventions which can be easily done to improve the current

situation. Printouts of the curriculum map can be widely distributed to different batches of students at the beginning of each semester. A student manual that includes the course objectives, content, learning methods, and assessment with explanatory diagrams will find great acceptance among the students. A session can be planned by a senior faculty or a course coordinator at the beginning of each course to explain the objectives, give handouts of the content, and inform students about assessment techniques and available resources. Such maneuvers render learning process to be more explicit and students to be more confident. Assignment of course coordinators from the faculty and students creates a friendly environment, makes communication easier, is expected to be well received by the students. Obadeji explains that designing a good curriculum without an efficient way to communicate it to the end users will be an effort in futility; for both students and teachers [24]. Consequently, all course materials should be uploaded to the Learning Management System (LMS).

Learning environment refers to the personal and social interactions, organizational cultures and structures, and physical and virtual spaces that surround and shape participants' experiences, perceptions, and learning [25]. The students in focus group discussion are unhappy about the Internet facilities, the library, the skills laboratory, and the lecture rooms' environment, especially the unstable electricity supply. The rest rooms facilities are poor and sites for entertainment are scarce. They also complain from the hostel's crowded environment in the student's residence. In the study addressing the learning environment at the Faculty of Medicine in Gezira University, most students were satisfied with the learning aspects, academic environment, but unsatisfied with the social atmosphere (inadequate

social support for stressed students, substandard teaching, over emphasized factual learning, and unpleasant accommodation [26]. In the study performed at the Faculty of Medicine, University of Khartoum, medical students positively perceived their learning environment. The areas needing improvement has been found within students' perceptions of learning, students' perceptions of the atmosphere, and students' social self-perceptions [27]. A study performed on the fifth-year medical students following a traditional curriculum at the College of Medicine in Saudi Arabia has identified overemphasis of factual learning, authoritarianism of teachers, inability of students to memorize everything, and boredom of students in courses as the four main problematic areas [28].

A supportive learning environment contributes to student well-being and enhances student empathy, professionalism, and academic success. In our study, students' responses has mostly indicated a more positive perception of the overall DREEM score (66.7%), except SPA2 which was viewed negatively by most students (62.7%). Some areas in the educational environment have been defined as problematic and need improvement. The success of any educational program will depend on the environment. Studies have shown that the quality of the learning environment is a predictor of the quality of care provided by graduates for years after graduation and also influences patient management and use of healthcare resources [29]. In the nonacademic administrative staff's focus group discussions, their reflections have criticized the environment of the school concerning the over crowdedness in the offices, power failures, water supply, and poor drainage system in the rainy season.

The educational process of this medical school is managed by the Dean, the Deputy Dean, and the Heads of the Departments. The Dean is accountable to the Faculty Board and its offspring the Curriculum Committee. However, both the Dean and Curriculum Committee operate under the supervision of the Dean of Academic Affairs, the Directory for Quality & Accreditation, the Deputy Vice Chancellor, the Vice Chancellor himself, and the University Senate. The implementation of the daily academic activities is the responsibilities of the Heads of the Departments supervised by the Deputy Dean. The Curriculum Committee is fully authorized for planning, implementation, and control of the curriculum, and responsible to look at any suggestions and amendments needed during the process of curriculum execution (*curriculum in action*). Such amendments must be approved by the Faculty Board and later approved by the University Senate before implementation. Although these arrangements are satisfactory, but for more tight management of the curriculum there is a need to assign a *Phase Coordinator* and *Course Organizer*. On the implementation of innovative strategies like PBL and systematic integrated competency-based approach, *Module Planners* are essential together with the formation of the *Module Committee* composed of representatives from the departments involved in that module.

The issue of continuous faculty development, particularly in medical education, is an activity which is taking place with different degrees and at different levels (workshops, certificates, diplomas, and master degrees). It is an encouraging development that has the potential to improve medical education abilities more than any other intervention [30]. It is high time to see a well-functioning Educational Development Centre in this school with four basic units (Faculty development, Curriculum planning, Assessment and Evaluation, Research).

The most important feature of the medical school of the future will be that it should have an authentic curriculum that prioritizes the graduation of doctors who have the necessary knowledge, skills, and attitudes to meet the needs of the population they are going to serve [31].

5. Conclusion

Harden's 10 questions are satisfactorily addressed by the curriculum of the FM-UK as it satisfies the community needs for the school and supports its mission and objectives. The content deserves more attention for the basic sciences and communication skills. The organization of the curriculum has some deficiencies, and the educational strategies need to be congruent with the *SPICES* model.

The teaching methods are to include the patients in community-based settings and family assignments; and the student's assessment is deficient in the area of continuous assessment, standard settings, and item analysis. The details of the curriculum must be better communicated and the course materials are to be uploaded to the LMS. The learning environment needs urgent interventions.

Recommendations

1. There is a need for more curriculum delivery organization, digital learning, and adoption of integration (horizontal, vertical, and spiral) along with introduction of PBL and inter-professional learning.

2. The social accountability of the medical school should be well documented and presented with clear evidence.

3. An active Educational Development Centre and establishment of a Quality Assurance Unit are vital for the curriculum execution and help in faculty development and retention.

Declarations

Acknowledgments

Ethical Considerations

Ethical clearance was obtained from the Research Ethical Committee at the Sudan Medical Specialization Board. The governance approval was obtained from the Dean, Faculty of Medicine, University of Kordofan.

Consents (written and verbal) were obtained from the study participants and confidentiality and anonymity of individual identity was adhered to. Soft and hard documents were secured from any distortion or abuse.

Competing Interests

None.

Availability of Data and Material

All Data presented in this article shall be available upon reasonable request.

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None.

Abbreviations and Symbols

FM-UK: Faculty of Medicine, University of Kordo-fanDREEM: Dundee Ready Education Environment Measure

MOHE: Ministry of Higher Education

SMC: Sudan Medical Council

CM: Curriculum map

ILO: Intended learning outcome

PBL: Problem-based learning

Mini-CEX: Mini-clinical evaluation exercise

EPA: Entrustable professional activities

LMS: Learning management system

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