

# Medical Students' Perceptions of the Implemented Curriculum at Sinnar Medical School: A Cross-Sectional Study from Sudan

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**Introduction:** Medical school curriculum evaluation is necessary to document outcomes, determine the effectiveness of educational programs, and meet accreditation requirements. This has become more difficult over the last decade, and it is critical to carefully assess the conclusion. The purpose of this research was to gather information from Sinnar medical students regarding their perceptions of the curriculum, learning, teachers, and academic self-perception.

**Methodology:** A cross-sectional analytic quantitative study including under and freshly graduated students was conducted in the Faculty of Medicine, University of Sinnar, Sudan, between the 18th of January 2021 and the 2nd of February 2022. Data was collected using a validated questionnaire including student perception of learning, student perception of teachers, academic self-perception, and student self-perception.

**Results:** A total of 705 students participated in this study. Of them, 443 (63.1%) were females, with the majority from second years (35.8%) followed by fourth-year (21.6%). A 433 (64.5%) agreed that the teaching is students centred, and teaching helped them in their development (68.0%). In addition, nearly half of the participants (58.1%) stated that the teacher communicated clearly and understandably. Unfortunately, 44.6% said that the exam did not achieve all the course objectives. The most tension-induced places were the dissection room (DR) accounting (70.3%) followed by lecture halls (55.6%). The most common reason for not enhancing research skills is the unavailability of the research department (72.8%), along with the stress associated with the curriculum due to a lack of enough time for different activities (63.8%). Significant differences between males and females were found when answering questions regarding research skills and students' involvement in curriculum time management.

**Conclusion:** Most students have a positive impression towards the local curriculum, learning, and engaged teachers. More studies with more standardization and specification regarding curriculum content, Curriculum structure and strategies, should be conducted in the future.

**Keywords:** medical school, perceptions, accreditation, curriculum, University of Sinnar, Sudan

## Introduction

Grant 2014 defines the curriculum as

A statement of the intended aims and objectives, content, experiences, outcomes, and processes of an educational program, including a description of the training structure, a description of expected methods of learning, teaching, feedback, and supervision<sup>1,2</sup>.

Curriculum analysis is the process of breaking down a curriculum into its constituent parts and analyzing how they fit together to make a coherent plan.<sup>1,3,4</sup>

Medical school curricular evaluation is necessary to document outcomes and determine the effectiveness to engage in quality improvement of educational programs. Furthermore, evaluation is required for compliance with and accreditation by the Liaison Committee on Medical Education (LCME). As undergraduate medical education (UME) curricula have become more complex over the last decade, and the majority of medical schools are undergoing both small and large curricular changes, it is crucial to cautiously evaluate the outcomes.<sup>5</sup> Goal-oriented evaluation is critical to ensuring that medical education program quality is maintained and that students achieve all medical education program objectives and are prepared to enter the health care system as residents while adhering to LCME accreditation obligations.<sup>1</sup>

The University of Khartoum and the University of Gezira were accredited by the World Federation of Medical Education (WFME) in May 2020, making them the first universities in Africa and the Middle East to do so. Immediately, the remaining 81 registered medical schools in Sudan embark on a continuous effort to meet WFME accreditation requirements, beginning with an analysis of strength and weekend elements in their curriculum;<sup>6,7</sup> however, this effort has been affected maximally by the complex political situation within the country that leads to frequent lockdown of these institutions sometimes for approximately one year. This was aggravated furthermore by more than 8 months of lockdowns due to the emerging covid\_19 pandemic without the availability of resources for alternative solutions such as online programs.

Due to ongoing local and national increasing demands for well-trained medical doctors who belong to their rural environment, have an extraordinary level of community engagement, can persist and act as a team leader for emerging health problems within limited resources, the government established the Faculty of Medicine University of Sinnar (FMUS) in May 1997 in Sinnar town, Sinnar State Sudan.<sup>8</sup> It has followed the University of Gezira's community-oriented, problem-based Curriculum since its inception. It has graduated over 3000 doctors who work in various disciplines in Sudan, the Middle East, and around the world.<sup>8</sup>

Surprisingly, this curriculum has never been objectively examined, since its inception, necessitating this research to keep up with the constant changes in the medical profession and educational context. The goal of this study was to obtain information from Sinnar University medical students about their perceptions of the curriculum, to assess general perceptions of learning, teachers, and academic self-perception, and to identify barriers to improving research skills.

## Methodology

### Study Design

A cross-sectional Analytical quantitative study was conducted in the College of Medicine, University of Sinnar, which is located in Sinnar state, Sudan, between the 18th of January 2021 and the 2nd of February 2022.

The faculty buildings include six lecture halls, a library with 1000 seats, a dissection room, a museum, and four laboratories for physics, biochemistry, histopathology, and microbiology. It is approximately 400 kilos away from Sinnar Teaching Hospital, where students conduct clinical rounds. The total number of students from the first to the fifth year is approximately 1500. (Divided by 60% from Sinnar state, 37% from other Sudan states, and 3% foreign students). The faculty's community-oriented curriculum is composed of 10 semesters (six for basic sciences and four for clerkship) with total credit hours of 231.

The study included all medical students enrolled in the College of Medicine from their first year to their one-year graduation, except for those who refused to participate and students who recently transferred to the university from another one.

### Data Collection Tools and Methods

Medical doctors gathered data using a well-structured questionnaire that was validated by medical education experts and approved by the faculty of medicine's research and ethical council. There are 23 questions in total, including,

### Sociodemographic Data

- Awareness towards curriculum type.

- Perceptions of learning.
- Perceptions of teachers.
- Academic self-perception.
- Perception of atmosphere.
- Social self-perception.

## Sampling

The study sample was (non-probability convenience), critical value of the Normal distribution at  $\alpha/2 = 1.96$ , margin of error = 0.05, sample proportion = 50%, and total population for medical students = 1500. Yielding an accepted sample size of 306 students.

## Data Management and Analysis

After collecting data, data were imported into excel to prepare it for analysis. The data was analyzed and described using SPSS version 24. Continuous data were presented as mean  $\pm$  SD and categorical data were presented as numbers and percentages). Regarding missing data, the number of observations was written for each variable in the table.

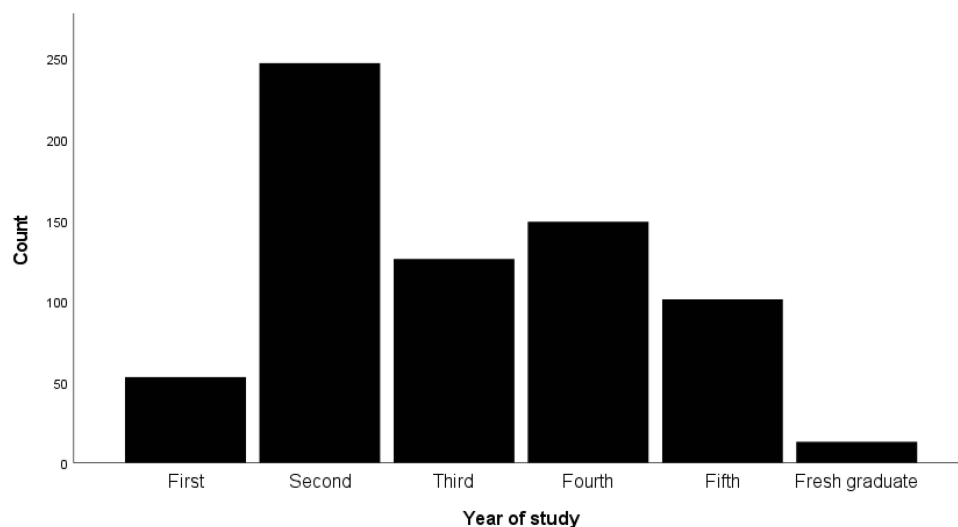
## Results

A total of 705 students participated in this study. Of them, 443/702 (63.1%) were females, and the majority were from second years (35.8%) followed by the fourth year (21.6%). (Figure 1).

A 433 (64.5%) agreed that the teaching is students centred, and teaching helped them in developing (68.0%). In addition, nearly half of the participants (58.1%) stated that the teacher give a clear example. Unfortunately, 44.6% said that the exam did not achieve all the course objectives. The rest of the information is shown in Table 1.

The most common places with no relaxed atmosphere were DR (70.3%) followed by a lecture (55.6%). The most common reason for not enhancing research skills is the unavailability of the research department (72.8%), and the curriculum is stressful due to the unavailability of time (63.8%). Further details are found in Table 2.

The present study assessed the level of perception of university students of Sinner toward their college curriculum. It is worth noting that this was the first time a study was done to assess the available curriculum in the college of medicine. The study involved 705 students of which most of whom were female with most of the participants having a positive view of the current Significant difference between males and females were found in the following questions: “Students are actively involved in planning and choice”, “relaxing atmosphere in Lecture”, “I can memorize all that I need to”,



**Figure 1** Years of study amongst medical students.

**Table I** Assessment of Curriculum Among Students

	Agree	Disagree
<b>Teaching</b>		
The teaching is student centred	433 (64.5%)	238 (35.5%)
The teaching help to develop myself	475 (68.0%)	224 (32.0%)
<b>Objectives, teacher, and learning</b>		
I am clear about learning objective of modules and lectures	349 (50.9%)	336 (49.1%)
The technology is used to delivered information in classroom	389 (56.1%)	304 (43.9%)
Students are actively involved in planning and choice	285 (41.1%)	409 (58.9%)
Teachers have good communication skills	357 (51.6%)	335 (48.4%)
Teachers give clear examples	402 (58.1%)	290 (41.9%)
Teachers are prepared for class	429 (62.5%)	257 (37.5%)
Seniors helps effectively in learning process	544 (77.6%)	157 (22.4%)
<b>Atmosphere and lectures</b>		
Atmosphere is relaxed during (lab/DR/lecture/rounds)	175 (25.1%)	522 (74.9%)
Atmosphere is relaxed during seminars/tutorial	321 (47.4%)	356 (52.6%)
I can memorize all that i need to	188 (27.8%)	488 (72.2%)
My problem-solving skills are being well develop	421 (62.1%)	257 (37.9%)
I am too tired to enjoy lectures	454 (66.1%)	233 (33.9%)
<b>Curriculum</b>		
My curriculum enhances patients' management skills	404 (61.4%)	254 (38.6%)
My curriculum enhances communication skills	459 (67.1%)	225 (32.9%)
My curriculum enhances research skills	300 (43.9%)	384 (56.1%)
My curriculum enhances ability of teamwork	482 (70.6%)	201 (29.4%)
My curriculum enhances independent learning skills	530 (77.3%)	156 (22.7%)
My curriculum is more time consuming	480 (70.4%)	202 (29.6%)
My curriculum is more stressful	548 (79.8%)	139 (20.2%)
I can ask questions when I need to	461 (66.5%)	232 (33.5%)
<b>The Exam achieve all the course objectives</b>	308 (44.6%)	383 (55.4%)

Note: <sup>1</sup>n (%).

“Select My curriculum to enhance research skills” and for “My curriculum is more stressful”. Further information was shown in [Supplementary Table 1](#).

## Discussion

Curriculum analysis is a valuable process used to recognize the success and potential problems, to appraise, take a decision, or improve the current curriculum, which eventually leads to the graduation of a competent individual able to fulfill the Sudanese community health needs.<sup>3,9,10</sup> In addition to these direct benefits to the students and community, the importance of curriculum analysis lies also in being one of the accreditation requirements.<sup>6,7</sup>

In the present study, most of the students claimed that the problem with research learning was due to a lack of specialized research departments and a lack of necessary material as part of the official curriculum. In his regard, a significant difference was found between males and females with more males responding to a lack of specialized research department P.value 0.045, and more females responding to unavailability of time for research activities. P.value 0.023.

Furthermore, 72.3% of students stated that they are facing difficulty in memorizing what they learned, particularly females, who recorded a significant difference among males p.value: 0.026, this could be solved by emphasizing active learning.

The exam should have an educational impact and must be achieving all course educational objectives involving knowledge, skills, and values. Interestingly, only 44.6% thought that the exam achieve the present course objective. This statement is inconsistent with Azoz. E al.<sup>11</sup> Present findings could be either due to the lack of deep understanding of the

**Table 2** Responses for Not Relaxing Places and Barriers to Enhance Research Skills

<b>Atmosphere is not relaxed during (lab/DR/lecture/rounds)</b>	<b>478</b>
Lab	219 (45.8%)
DR	336 (70.3%)
Lecture	266 (55.6%)
Round	230 (48.1%)
<b>My curriculum did not enhance research skills</b>	<b>378</b>
No data base	200 (52.9%)
No research department	260 (72.8%)
No time	203 (53.7%)
Difficult access to data	181 (47.9%)
No funds	158 (41.8%)
<b>Select My curriculum is more stressful due to</b>	<b>469</b>
Time is not enough	299 (63.8%)
Environmental factor	274 (58.4%)
Credit hours maldistribution	128 (27.3%)

**Note:** <sup>1</sup>n (%).

course objective by the students as only half of the students were clear about certain module objectives or perhaps due to the exam being written by different staff than the original teachers. This issue could be overcome if teachers present a clear educational objective for each module before it is started in addition to a clear comprehensive title along with learning outcomes for each lecture before giving it to students. In addition, content validity should be maintained by using the table of specifications to state an exam according to the course's educational objectives.

Although most of the students reported their education to be student-centred, only 40.1% of them reported that students were involved in the decision-making. This contradictory statement could be due to the unclear understanding of the student-centred approach among the participants. This is differed significantly between males and females, with males having a more negative perception  $P$ -value:0.032.

As mentioned before, there is a difference in the level of perception between males and females regarding some parameters of this survey, it was more apparent with questions regarding stressful and relaxing places within the college. This difference could be related to the fact that females are more emotional in the way they perceive the world.<sup>12</sup> For example, females feel the curriculum is more stressful than males ( $p$ -value 0.01) males consider the lecture atmosphere is more relaxed than females ( $p$ -value 0.026).

Teachers play an indispensable role in ensuring the success of the educational procedure; therefore, it is necessary to ensure that they have good communication skills to help them provide a clear message to their students. In this survey, three questions were used to assess the way students perceive the effectiveness of their teacher communication techniques. Most of the students report that the teacher comes to the class well prepared, which helps them, communicate the information clearly and understandably. Such a result is consistent with previous studies.<sup>1,13</sup>

Along with teachers, seniors also play an influential role in helping their juniors to understand difficult scientific concepts, which is why a good relationship between joiners and seniors is an important quality of a good educational environment. Fortunately, a large percentage of students involved in this study (77.6%) reported that their seniors help them in their educational activities in some way or another.

Studying medicine involves participating in many stressful activities; like participating in the lab, dissection room (DR), lectures, and rounds. Understandably DR was the most stressful as reported among (70.3%) of students, followed by lectures as stated by (55.6%) of the student. This level of stress could explain why most of the surveyed students (66.1%) expressed a sense of exhaustion and lack of enjoyment during lectures. This is inconsistent with a study done in Sudan<sup>14</sup> and others performed in Saudi colleges,<sup>1</sup> which could be due to differences in learning environments between the involved universities.<sup>15–17</sup>

Moreover, problem-solving skills are considered one of the most essential components of the curriculum, by which students will be prepared to be critical thinkers in the future.<sup>3</sup> Additionally, problem-solving skills require integration between basic and clinical sciences,<sup>18</sup> implementing such integration could potentially enhance the learning environment of students.<sup>19–21</sup> Fortunately, again, (62.1%) of the students thought that their problem-solving skills are being well developed, this is agreed with.<sup>3</sup>

Regarding the curriculum, (61.4%) of the students have recognized enhancement of their management skills, (67.1%) of their communication skills, which is an essential part of the professionalism, (70.6%) of their ability to teamwork, and (77.3%) to independent learning skills.

Negative perceptions should be taken into account, and corresponding issues should be solved by key stakeholders, for example by establishing a dedicated research department in the college, giving it a higher weight in the curriculum, and thus allowing students to learn effective research skills.

Other obstacles to the curriculum like stress and time issues can be dealt with by doing a regular revision and reforming the curriculum by the curriculum committee,<sup>1</sup> Eliminating unnecessary information, and aiming to be a more student-centred, curriculum through proper use of modern pedagogical approaches.<sup>1</sup> Such curriculum models are found to be successful when applied in other local universities like (FMUG) for example in Sudan,<sup>22</sup> also in the Faculty of Medicine and Health Sciences, University of El Imam El Mahdi.<sup>11</sup>

Curriculum revision is necessitous because of the continuing changing in the healthcare system and subsequently in their demands.<sup>23</sup> The overall perception of the students in this survey seems to be a positive one, with most of the students having favourable views about the different aspects of the curriculum. This finding is consistent with a previous study that was performed in Sudan,<sup>14</sup> as well as other studies done in India,<sup>24</sup> Sweden, Australia,<sup>25</sup> British School of Osteopathy,<sup>25,26</sup> Saudi Arabia (Umm Al-Qura University in addition to King Abdulaziz University),<sup>25</sup> the United Arab Emirates,<sup>27</sup> Kuwait,<sup>28</sup> Canada.<sup>29,30</sup>

## Conclusion

The present study highlighted the perceptions of medical students towards the implemented curriculum at Sinnar Medical School. Interestingly, similar data is limited in the literature concerning (FMUS). Although, most students have a positive impression of the local curriculum, learning, and engaged teachers. However, more studies with more standardization and specification regarding curriculum content, curriculum structure, and strategies, should be conducted in the future.

## Ethical Consideration

Ethical approval was obtained from the research and ethics committee at the faculty of medicine and health sciences, University of Sinnar, Sinnar, Sudan.

## Disclosure

Fadi M Toum Ahmed and Mohammed Mahmmoud Fadelallah Eljack are joint first authors. The authors report no conflicts of interest in this work.

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