

# Medical students' perception of the reformed medical curriculum at King Saud University

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## ABSTRACT

**Objectives:** To evaluate the King Saud University (KSU) medical students' perceptions of the educational programmes' quality.

**Materials and Methods:** A total of 289 medical students at KSU, College of Medicine were selected randomly from year 1 through year 5 and were invited to participate in a descriptive cross-sectional study design. A questionnaire was distributed to the students and collected on completion. The questionnaire measured the students' perceptions of the educational programmes and their competence, as well as their overall satisfaction with the training delivered and the feedback system.

**Results:** About 60.5% of the students declared that the educational programmes provided them with the necessary knowledge while only 48.5% of students believed that it provided them with the necessary skills required. Only 34% of students stated that the intended learning objectives were known to them at the beginning of the courses. About half of the students indicated that the programmes actively involved them in the problem-solving process. Half of the students believed that the amount of basic science knowledge provided was enough; however, 39.5% of students (in their clinical years) believed that the amount of knowledge delivered in the basic science courses was inadequate. Only 18.4% of students considered that the basic science courses prepared them for a clinical clerkship. 17.7% of the students declared that the research activities improved their research skills. 47.3% believed that the research activities helped them in understanding community characteristics, 57.6% asserted learning the basics of medical statistics, 44.6% believed it helped them in using the available resources in solving community problems and 49.5% believed it helped them in learning as well as acquiring project management skills. 34% of the students participated in planning educational activities while 53.7% participated in evaluating these educational activities. 36.1% of students gave frequent feedback to the college. Only 30.2% of the students were satisfied with the overall quality of the educational programmes.

**Conclusion:** The students' perception of the educational programmes was illustrated and important aspects were highlighted which needed to be addressed and revised in order to improve the quality of the curriculum.

**Keywords:** Basic science, clinical year, education, medical college, medical students

## INTRODUCTION

King Saud University (KSU) was founded in 1957. It is the first university in Saudi Arabia which now has

21 colleges under it. The College of Medicine, founded in 1969, at KSU was the first medical college in Saudi Arabia. In 2014, KSU was ranked 151-200 in the Shanghai ranking for world universities. High school graduates enter the health colleges' preparatory year where they would be selected based on their academic performance. In 2010, the College of Medicine revised the curriculum to meet the international standards in medical education. The reformed curriculum is

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a system-oriented, student-centred, integrated and community-oriented curriculum. The curriculum spans 5 years and is divided into basic science (years 1 and 2), preclinical (year 3) and clinical (years 4 and 5) [Figure 1]. The first 2 years are divided into a system-oriented block that covers multiple disciplines: Anatomy, physiology, pharmacology and pathology. During these 2 years, the students are introduced to basic clinical skills as part of the vertical integration of the curriculum. The students also learn through small group discussion sessions that involve a clinical scenario. Practical sessions are also included to introduce students to practical skills. Year 3 is the preclinical year, during which students cover different aspects of medicine and surgery, in addition to research and community medicine. The clinical period is divided into rotations through the clinical departments: Surgery, medicine, paediatrics, obstetrics and gynaecology, ophthalmology, ENT, psychiatry and orthopaedics.

The curriculum is in a dynamic state of continuous revision and update to improve and meet the international standards in medical education.<sup>[1,2]</sup> The curriculum is evaluated each year by the Quality Unit, which is part of the Vice Deanship for Quality and Development Unit. Such developments are based on the feedback received from staff members and the students at the end of the year as well as at the end of the courses. Action plans are initiated every year to improve the curriculum. These action plans are monitored closely by the Academic Quality Unit in coordination with the Curriculum Committee at the college. Students are an important source of information for evaluating and improving the educational programmes.<sup>[3-7]</sup>

The purpose of this study was to evaluate the students' perception of the educational programmes in the College of Medicine at KSU.

## MATERIALS AND METHODS

### Study population

The study was approved by the Department of Medical Education and by the IRB at the College of Medicine, KSU. The study enrolled 289 students who were selected randomly from the 5 years of medical college following the mid-year vacation of the 2013-2014 academic year. The questionnaire was distributed to the students and collected once completed [appendix 1]. Each questionnaire was handed to the student with a cover letter from the Academic Quality Unit that described the purpose of the study and emphasised confidentiality of the content. The questionnaire was prepared in English language. The questionnaire consisted of four questions which focussed on the students' perception of the educational programmes and their competence,

as well as their overall satisfaction with the training delivered and the feedback system.

The students were requested to evaluate the educational programmes with regards to the knowledge, skills and attitude they instill. The students evaluated the basic science and clinical courses. However, the study did not evaluate mandatory courses.

### Data collection

The data obtained from the study were entered into a database. Data analysis was performed using SPSS version 14.0 (SPSS Inc., Chicago, IL, USA).

### Statistical analysis

Results were analysed using SPSS statistical programmes. Data were examined with statistical variables (frequencies, percentages, means, standard deviations and ranges). Groups were compared with the Chi-square test for categorical variables.  $P < 0.05$  was considered statistically significant.

## RESULTS

A total of 289 questionnaires were distributed in paper form to randomly selected medical students from year 1 to year 5. The response rate was 44.5% for female students and 55.5% for male students. The students' response rates were 17.4% for year 1, 20% for year 2, 23.7% for year 3, 19.4% for year 4 and 19.4% for year 5. There were no statistical differences between the groups in regards to the students' perception of the educational programmes.

### Knowledge and skills

There were no statistical differences between the groups with regards to the students' perception of the educational programmes in acquiring the necessary knowledge and skills. The students rated the degree to which the educational programmes helped them in acquiring necessary knowledge [Figure 1a].

Figure 1b summarises the students' perceptions on the degree to which they acquired the necessary skills provided by the educational programmes. The highest score reported was for acquiring the necessary knowledge and the lowest score reported was for acquiring the necessary skills.

### Learning objectives

Only 34% of the students thought they knew the intended learning objectives at the beginning of the courses. However, 60.1% of the students stated that they knew the intended learning objectives only to some extent [Figure 1c].

### Problem-solving

About half of the participating students from both the preclinical and clinical years felt that the educational programmes encouraged them to solve problems [Figure 2].

### Basic science courses

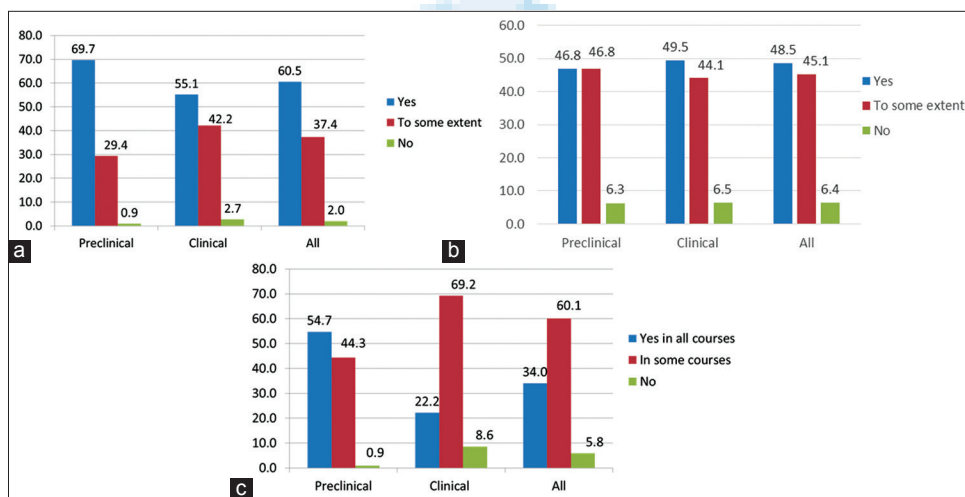
There were no statistical differences between the groups in the students' perception of the educational programmes in providing adequate information in basic science courses. The students rated the degree of their satisfaction regarding the amount of basic science courses [Figure 3]. Half of the participating students felt that it was sufficient, but 39.5% of the students in their clinical years thought that the knowledge delivered in the basic science courses was inadequate. Only 18.4% of the students thought that the basic science courses prepared them for clinical clerkship while 60.9% thought it only prepared them to some extent whereas 20.7% thought it did not prepare them enough [Figure 2]. Majority of the students felt they were not exposed to patient care soon enough during their preclinical years [Figure 2].

### Research activities

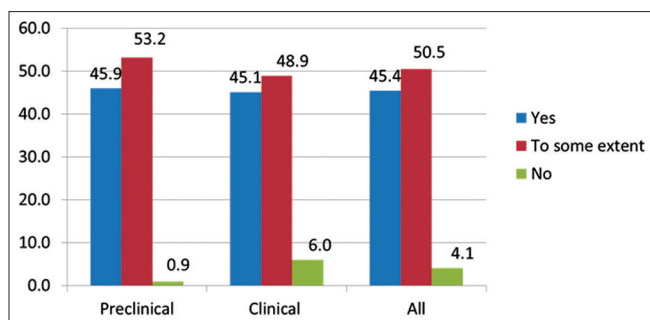
The students' perception of the benefits of research activities are summarised in Figure 3; 71.7% of students declared that the research activities improved their research skills; 65.2% reported improved teamwork skills; 47.3% reported increased understanding of community characteristics; 57.6% reported it helped them in learning basic medical statistics; 44.6% reported it taught them how to use the available resources in solving community problems; and 49.5% reported learning project management skills. There was no statistically significant difference between the different students groups. The highest score reported was for improved research skills while the lowest score reported was for using available resources in solving community problems.

### Feedback and evaluation

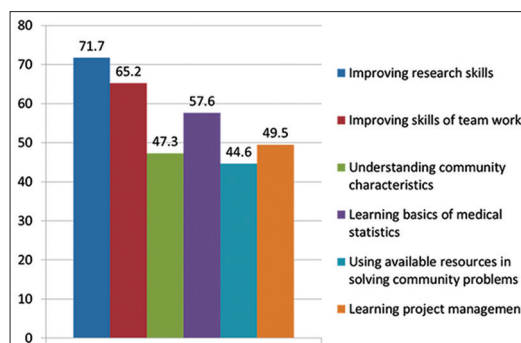
There were no statistical differences between the student groups. Figure 4a shows that 34% of the students participated in planning educational activities while 53.7% participated in evaluating these educational activities. Figure 4b shows the students' perception



**Figure 1:** (a) Students' perception of whether the college's educational programmes helped students to acquire the necessary knowledge. (b) Students' perception of whether the college's educational programmes helped students to acquire the necessary skills. (c) Students' perception of whether the learning objectives were known to them at the beginning of each course in the curriculum



**Figure 2:** Students' perception of whether the educational programmes encouraged students to be actively involved in solving problems in an analytic way



**Figure 3:** Students' perception of the research activities and their benefits

of the frequency of feedback given by students to the college about the educational programmes: 36.1% of the students gave frequent feedback to the college, 36.4% gave feedback occasionally, 18.4% gave feedback only in the event of a serious problem while 9.2% never gave feedback. Furthermore, 24.1% of the students were satisfied with the actions taken by the college in response to the students' feedback about the courses [Figure 4c].

### Overall satisfaction of the educational programme

Figure 4d shows that 30.2% of students were satisfied with the overall quality of the educational programmes and that 59.1% were satisfied only to some extent while 10.7% were unsatisfied.

## DISCUSSION

This study presented the results of the survey conducted to assess the medical students' perception of the reformed medical curriculum. The survey results provide the college authorities with important information, which highlights many aspects of the curriculum that needs to be addressed in order to improve the curriculum.

The study showed that the learning objectives of the educational programmes were unclear to only 5.8% of the students. This is similar to the report published by the Association of American Medical Colleges (AAMC) in 2006, which showed that 7.6% of the students stated that the learning objectives were unclear.<sup>[8]</sup>

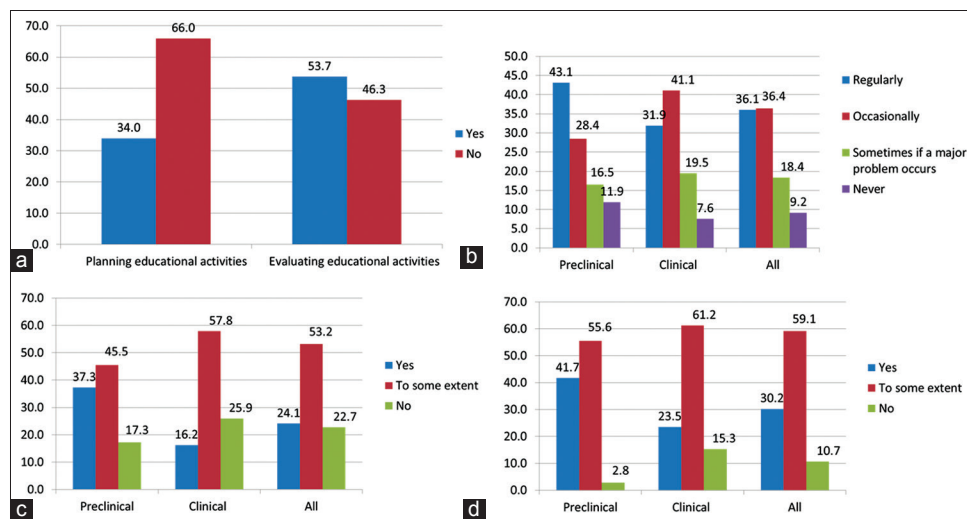
Twenty-one percentage of the respondents felt that the basic science courses did not prepare them for their preclinical clerkships, which is similar to the rates found in previous studies on medical graduates.<sup>[8]</sup>

Overall, the students' satisfaction with the educational programmes seemed to be good. More than half of the students who participated indicated that they were satisfied with their overall medical education. This is in comparison to 90.2% in the AAMC report, published in 2006. However, previous studies report an overall satisfaction rate of 28.4%.<sup>[9,10]</sup>

More than half of the students who participated were satisfied with the research activities within the educational programmes. This result highlights the emphasis of the reformed curriculum for more student involvement in research activities and research projects. The results from this study were convincing and comparable to those of previous studies.<sup>[11]</sup>

Approximately half of the students who participated were satisfied with the amount of knowledge provided in the basic science courses and confirmed that it helped them in their clinical practice. The retention of knowledge obtained in the basic science courses was of essential importance for medical educators.<sup>[12]</sup> It is important for medical students to both remember and make use of the knowledge they have been provided in basic science courses.<sup>[13,14]</sup> Previous studies showed that there is a considerable amount of knowledge loss among medical students.<sup>[13]</sup> D'Eon concluded that the awareness of knowledge loss can be used to target courses for review and revision in order to identify weaknesses in the overall educational programmes.<sup>[13]</sup>

This study showed that 43.7% of the students felt that the education programmes incorporated students into the learning process. The current reformed curriculum is an integrated, student-centered curriculum that includes small group sessions in which



**Figure 4:** (a) Students' perception of the students' participation in the educational activities. (b) Students' perception of the feedback system. (c) Students' satisfaction with the actions taken by the college in response to the feedback. (d) Students' satisfaction with the overall educational programme

problem-based learning is introduced. It encourages student involvement in the curriculum and places an emphasis on the students and their individualised learning.<sup>[15]</sup> In the student-centered curriculum, students can choose what they study, their pace of study, and the study method.<sup>[15]</sup> The study showed that 45.4% of the students felt that the curriculum involves students in problem-solving. This result was promising, as the current curriculum was reformed to involve problem solving, in which students acquire their knowledge and skills through solving problems themselves.<sup>[15]</sup>

The data presented in this study is only a small portion of the information collected for the purpose of evaluating the medical curriculum. Most medical schools evaluate their medical curriculum regularly in order to adjust the curriculum and revise it accordingly.<sup>[3]</sup> Students are a very important source of feedback regarding the educational programmes provided. Through questionnaires, students can provide valuable data which help to assess the quality of the educational programmes and how it prepares them for their clinical practice.

Advances in scientific knowledge and innovations in the educational field require constant changes in the medical school curriculum.<sup>[16]</sup> The Medical Education Department evaluates and revises the curriculum on a regular basis. After 5 years of implementing the reformed curriculum at KSU, many feel that the medical curriculum is in need of major revisions to keep abreast of the rapidly changing modern health sciences.<sup>[11,17]</sup> This study highlighted the issues that need to be addressed in the medical curriculum. Several other surveys and studies were performed as part of the curriculum evaluation, exploring the deficiencies in the current curriculum. The Curriculum Unit at the Medical Education Department would then plan for curriculum revision and development accordingly.

One of the limitations of this study was that the students evaluated the basic science courses years after completing the courses. Another limitation was the sample size.

## CONCLUSION

This study showed the students' perception of the educational programmes and highlighted important aspects that need to be addressed and revised in order to improve the curriculum. Based on the information obtained from this study and other surveys of the reformed medical curriculum, the College of Medicine in KSU has started the curriculum revision process, to improve the curriculum to ensure they provide

the students with the necessary knowledge and skills needed. Revision of the intended learning objectives, which has already taken part in the college, would strengthen the educational programmes. Several actions have been taken to include more activities that involve the students in the learning process, encouraging them to participate in problem-solving and improving their research and project management skills. Emphasis on the feedback system to involve frequent students' feedback is noteworthy.

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## Conflicts of interest

There are no conflicts of interest.

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## APPENDIX 1

### Student's questionnaire

Dear students,

The following questionnaire which you are kindly requested to fill is designed to evaluate your awareness and satisfaction about the various aspects of the college undergraduate programmes and student offered services. This is part of the college efforts for self-review and continuous improvement. Although your participation is optional, your contribution is of utmost value for the self-study process.

Name (optional):

Gender:

(a) Male

(b) Female

### Educational programme

1. Does the college educational programmes help you to acquire the necessary:

	Yes	To some extent	No
a. Knowledge			
b. Skills			
c. Attitude			

2. Are the intended learning objectives known to you at the beginning to each course?

a. Yes in all courses

b. In some courses

c. No

3. Do the educational programmes encourage you to:

	Yes	To some extent	No
a. Actively involve in the learning process			
b. Solve medical problems in an analytical way			

4. Are you satisfied with the overall quality of the educational programmes?

a. Yes

b. To some extent

c. No