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Perceptions of Medical Students in King Abdulaziz University about Teaching and Learning Modalities; Comparative Cross Sectional Study between Traditional and System-based Curriculum

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Abstract. The undergraduate curriculum of the Medical School-King Abdulaziz University, Saudi Arabia was a traditional one (it was teacher-centered, discipline-based, and hospital-based with no options or elective modules). In 2006-2007, the Medical School adopted a new system-based curriculum. This study was constructed to compare the perceptions of students of both, the traditional and new curricula to identify the problem areas that should be remediated. A comparative cross-sectional study was carried out with the third- and fourth-year students at 2008/2009. A questionnaire was distributed to the third-year students who were enrolled in the new system-based curriculum (n = 227 response rate was 80%) and to the fourth-year students who were enrolled in the old curriculum (n = 217 response rate was 76%). For the third-year students, the total mean scores of all the studied domains were significantly higher compared with the fourth-year students except for the fourth domain (library and electronic learning resources), which showed an insignificant difference between the two groups. Perceptions of students who experienced the system-based curriculum are significantly higher than those who had experienced the traditional ones; however, the overall score is still low. Therefore, there is a great need for improvement.

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Introduction

The undergraduate curriculum of the Faculty of Medicine in King Abdulaziz University (KAU), Saudi Arabia, as with most medical schools in the Middle East region, was traditional until 1427 to 1428 A.H. (2006-2007A.D.). The traditional curriculum was teacher-centered, discipline-based, and hospital-based with no options or elective modules as defined by the General Medical Council[1]. The teaching process depended mainly on information gathering, with the teacher as the main source of information. Teaching methods comprised of lectures, tutorials, and practical classes. Little emphasis was placed on how the knowledge or skills would be used in later parts of the course. Students reduced of what was to be learned to the status of unconnected facts as to memorize. The learning task was to reproduce the subject matter in the final examination. Generally, students saw learning as something prepared to them by the teacher, and they viewed the curriculum as an aggregate of separate subjects.

In 2006 to 2007, the Faculty of Medicine at KAU adopted a new system-based curriculum that sought to conform the prescriptions for curriculum innovation as outlined in 'Tomorrow's Doctors' as mandated by the General Medical Council of the UK[1].

Teaching and learning occur in two successive phases. The educational strategies adopted; include elements of problem-based learning, student direct learning and problem solving in teaching and learning. Students are encouraged to take more responsibility for their own learning as they progress through the curriculum. The approach to assessment emphasizes the overall outcomes of the course. In addition, the organization and management of the curriculum and allocation of resources are designed to support the educational philosophy[2].

The educational environment makes an impact on students' learning experiences and their outcomes, plus it influences how, why, and what students learn[3]. Studying this unique teaching personality enables faculty, administrators, and students to answer the question, "What is medical education here really like?"[4]. Positive environment and positive learning outcomes appear to go together.

Presently, at the Faculty of Medicine, KAU, there are two curricula applied simultaneously; the traditional and system based-curricula. The aim of this study was to compare the perceptions of students of both, the traditional and the new curriculum as well as to identify problem areas that needs be remediated.

Subjects and Methods

Ethical approval for this study was granted by the Ethics Committee in the Faculty of Medicine at KAU. The target of this study was the third- and fourth-year undergraduate medical students at KAU. Third-year students represented those who experienced the system-based curriculum, whereas those of the fourth year experienced the traditional curriculum. A cross-sectional study was carried out on those students during 2008-2009. A well constructed questionnaire was prepared and given manually to about half the number of the third- and fourth-year medical students.

The questionnaire encompassed five domains;

- The educational program in general: 15 items/maximum score 60
- The relationship between the students, faculty, and management: 4 items/maximum score 16.
- Student support: 9 items/maximum score 36.
- Learning environment: 4 items/maximum score 16.
- Library and electronic learning resources: 6 items/maximum score 24

Each item scored 4–0 with 4 = strongly agree, 3 = agree, 2 = unsure, 1 = disagree and 0 = strongly disagree by the respondents.

The number of third-year students who received the questionnaire was 224 (both males and females). The number of the respondents was 179 (80%). On the other hand, the number of fourth-year students who received the questionnaire was 217 (both males and females) and the number of the respondents was 165 (76%).

The data were analyzed using SPSS version 16, (Contractors/ Manufacturing; SPSS Inc., 233 South Wackar Driver, 11 floor Chicago, IL 60606-6307) and was presented in the form of mean ± SD. Student's "t" test was used to compare the two studied groups and the significance

was considered at $p < 0.05$, highly significant at $p < 0.01$ and extremely significant at $p < 0.001$.

Results

Overall Mean Scores

The total mean scores for the five studied domains are specified in Table 1. For the new system-based curriculum students (third year); the total mean scores of all domains were significantly higher compared with the traditional curriculum students (fourth year), except for the fourth domain (library and electronic learning resources), which did not show significant difference between the two groups (Table 1).

Table 1. Comparison between third and fourth year regarding domains of the traditional and system-based curriculum at King Abdulaziz University Medical School.

Domain	Third Year	Fourth Year	Test of Significance	
	Mean ± SD	***Mean ± SD***	***t***	***P***
The educational program in general	34.9 ± 8.6	30 ± 8.9	5.3	< 0.001‡
The relationship between the student, faculty, and management	10.9 ± 2.7	10.1 ± 3.1	2.5	0.012*
Student support	18.5 ± 5.3	15.6 ± 6.6	4.5	< 0.001‡
Learning environment	7.7 ± 2.9	7.01 ± 3	2.2	0.029*
Library and electronic learning resources	13.3 ± 4.5	13.9 ± 3.7	-1.2	0.22
Total	**85.4 ± 18.8**	**76.6 ± 20.1**	**4.2**	**< 0.001‡**

**Significant p < 0.05, †Highly Significant, p < 0.01, ‡Extremely Significant p < 0.001*

Individual Item Scores

Third-year students found that they were taught by methods that increased their interest and enthusiasm, and it focused on the learning of scientific facts than with the fourth-year students. They felt the methods of instruction were highly efficient and it helped them to remember learning topics than with the fourth-year students. Third-year students experienced integration between basic and applied clinical science and good allocation of time more effectively than fourth-year students. Overall, the third-year students were taught by more satisfying methods than the fourth year. On the other hand, there was no significant difference between third- and fourth-year students' perception in regard

to the item, "if method of instruction encourages continuing long-term self-education or not" (Table 2).

Table 2. Comparison between third and fourth year regarding educational program of the traditional and system-based curriculum at King Abdulaziz University Medical School.

Item	Third Year	Fourth Year	Test of Significance	
	Mean ± SD	***Mean ± SD***	***t***	***P***
The teaching method increases my interest and enthusiasm	2.5 ± 1	1.7 ± 1.2	7	<.001‡
Teaching often focuses on the education of scientific facts	2.5 ± 2.2	2.2 ± 1	2.6	.009†
The time allocated for the teaching is invested very well	2.4 ± 1.9	1.1 ± 1.2	4.5	<.001‡
I can remember what information I need	2.1 ± 1	1.8 ± 1	2.9	.003†
Method of instruction encourages continuing long-term self-education	2.2 ± 1.1	2.1 ± 1.2	1.4	.15
Method of instruction is highly efficient	2.3 ± 1	1.9 ± 1.1	3.3	.001†
Teaching method helps me to remember education topics	2.1 ± 1.1	1.7 ± 1.1	2.8	.005*
Teaching method is characterized by integration between basic and applied clinical science.	2.7 ± 1	1.9 ± 1.3	6.5	<.001‡
Teaching and learning method satisfy me.	2.3 ± 1.1	1.5 ± 1.1	7	<.001‡
Teaching method often stimulates me.	2.2 ± 1.1	1.8 ± 1.3	2.9	.004†
Professor dominated by the love of control	1.9 ± 1.1	2.1 ± 1.2	-1.6	.12
Student plays a key role in the process of teaching.	2.2 ± 1.1	2.4 ± 1	-1.7	.09*
Faculty member plays a key role in the process of teaching	2.3 ± 1.2	2.4 ± 1	-1.2	.22
Teaching is characterized by focusing on the theme of the lesson	2.6 ± 1.1	2.4 ± 0.9	1.6	.13
Modern technology conveys information to me quickly and easily.	2.6 ± 1.1	2.2 ± 1.1	3.4	.001‡

**Significant p < 0.05, †Highly Significant, p < 0.01, ‡Extremely Significant p < 0.001*

In regards the relation between the students, faculty, and administration, the students in their third year had a more clear idea about the educational objectives of the subjects than those of the fourth year. They also felt that their faculty was more distinct technically and scientifically. There was no significant difference between the two studied groups as regards the ability of students to communicate with their colleagues and faculty (Table 3).

Table 3. Comparison between third and fourth year regarding the relationship between the student, faculty, and administration in the traditional and system-based curriculum at King Abdulaziz University Medical School.

Item	Third Year	Fourth Year	Test of Significance	
	Mean ± SD	***Mean ± SD***	***t***	***P***
I have a clear idea about the educational objectives of the subjects	2.6 ± 1	2.4 ± 1.1	1.7	.09*
I feel excellence among my fellows in other faculties	3 ± 1	2.8 ± 1.1	1.4	.16
I feel my faculty is distinct technically and scientifically	2.7 ± 1	2.5 ± 1	2.2	.03*
I have the ability to communicate with my colleagues and faculty.	2.6 ± 1	2.4 ± 1.1	1.7	.09

**Significant $p < 0.05$*

Students who experienced the system based-curriculum (third year) perceived that the method of instruction assisted more to increase their confidence, refine their skills in analytical thinking, and increase their ability to work in a team. They also felt that this method of instruction was more helpful to them to perform the requirements of their career than the students who experienced the traditional curriculum (fourth year) (Table 4).

Regarding learning environment, third-year students felt they were more comfortable psychologically at the lecture hall and were more encouraged to participate in the lectures and panel discussions. On the other hand, there was no significant difference between third- and fourth-year students in regards to boring sensations they rarely developed in the lecture hall and panel discussion. Both of them found that teachers use effectively modern technology during their teaching lesson (Table 5).

Table 4. Comparison between third and fourth year regarding student support of the traditional and system-based curriculum at King Abdulaziz University Medical School.

Item	Third Year	Fourth Year	Test of Significance	
	Mean ± SD	***Mean ± SD***	***t***	***P***
Method of instruction assisted to increase myself confidence	2.7 ± 1	2.2 ± 1	4.2	<.001‡
Method of instruction participated to refine my skills in analytical thinking	2.7 ± 1	2.2 ± 1.2	4.6	<.001‡
Method of instruction helped me to identify my educational needs	2.6 ±.9	2.5 ± 1.1	1.7	.09
The methods of instruction increased my ability to work in a team	2.6 ± 1	2.2 ± 1.1	3	.003†
Method of instruction prepared me for the exercise of my career	2.4 ± 1	2.1 ± 1.1	3.4	.001‡
I feel that the study in this faculty prepared me well to perform the requirements of my career	2.4 ± 1	2. ± 1.2	3	.003†
Teaching method helped me to develop my capability	2.1 ± 1.2	1.6 ± 1.2	3.5	.001†
The time I spend in my faculty allows me to practice student activities	1.9 ± 1.2	1.6 ± 1.2	2.2	.03*
Student activities refine my skills	1.8 ± 1.2	1.5 ± 1.3	2.6	.01*

**Significant p < 0.05, †Highly Significant, p < 0.01, ‡Extremely Significant p < 0.001*

Table 5. Comparison between third and fourth year regarding learning environment of the traditional and system-based curriculum at King Abdulaziz University Medical School.

Item	Third Year	Fourth Year	Test of Significance	
	Mean ± SD	***Mean ± SD***	***t***	***P***
I am rarely bored in the hall of lectures and panel discussions	1.6 ± 1.1	1.5 ± 1.3	0.8	.42
I am enough encouraged to participate in the hall of the lecture and panel discussion	1.9 ± 1.1	1.6 ± 1.2	2.2	.03*
I feel comfortable psychologically at the Lecture H Hall	2.1 ± 1.2	1.8 ± 1.2	2.5	.01*
Teachers use effectively modern technology during the teaching	2 ± 1.2	2.1 ± 1.1	-0.07	.91

**Significant p < 0.05*

Third-year students found that the study guide was more helpful to them to know the educational objectives, methods of learning, and methods of assessment as well as the sources of learning for each course. They believed that visiting the library was more important to their study, and they found the library services available and adequate. They also felt that modern methods of technology were used more in teaching and in testing (Table 6).

Table 6. Comparison between third and fourth year regarding library and electronic learning resources of the traditional and system-based curriculum at King Abdulaziz University Medical School.

Item	Third Year	Fourth Year	Test of Significance	
	Mean ± SD	***Mean ± SD***	***t***	***P***
There is study guide for each studied course	2.3 ± 1.2	2.2 ± 1.1	0.4	.71
Study guide helps me to know the educational objectives and methods of learning	2.3 ± 1.2	2.6 ± 1.1	-2.1	.04 *
Study guide helps me to know the methods of assessment and sources of learning	2.2 ± 1.4	2.8 ± 1	-4.9	<.001‡
Visiting library is important to my study	2.1 ± 1.4	2.5 ± 1.2	-3	.003†
Modern methods of technology are used in teaching and testing	2.6 ± 1.2	2.2 ± 1.3	2.7	.007†
Library services are available and adequate	1.9 ± 1.3	1.6 ± 1.1	2.8	.01*

**Significant p < 0.05, †Highly Significant, p < 0.01, ‡Extremely Significant p < 0.001*

Discussion

The scores for the main domains and items in the present study gave a clear indication of where the priorities for remediating the curriculum lie and in improving the plan that needs to take place. For example, the domains of library and electronic learning resources, and the relationship between the student, faculty, and management need to be improved as there was no or little significant difference between the traditional and system-based curriculum. The items to be improved were, for example, to make the method of instruction more encouraging, continue long-term self-education, allow students to play a key role in the process of

teaching, and make professors more willing to listen to students' ideas. The method of instruction should be more helpful in identifying students' educational needs and give a clear idea about the educational objectives of the subjects. Also, the study guide should play a major role in guiding students to know the educational objectives and methods of learning. Library services should be more available and adequate.

Some researchers performed a comparative study of the educational environment in traditional and innovative medical schools, including the educational environment at Dundee University Medical School[5]. The curriculum changes made, enhanced to perceive the educational environment to conform to the UK General Medical Council's educational recommendations if it is considered to be in the national interest to do so. The Medical School in KAU responded by preparing a new system-based curriculum, which was applied in the 2006-2007 academic year.

Some researchers provided data that serve as a baseline for a longitudinal quality assessment of students' perceptions of the changes planned for the Faculty of Medicine at KAU[6]. They concluded that the new integrated system-based curriculum may have dramatic effects on the educational environment. Also, the present study can be used, in the Faculty of Medicine at KAU, as a follow-up for the comparative study between the traditional curriculum and the integrated curriculum that is presently being used.

Conclusion

Perceptions of the students who experienced the system-based curriculum at KAU are significantly higher from those experienced the traditional ones, however, the overall scores are still low and there is a need for improvement and new development.

Conflicts of Interest

No funding had been provided for this study and no conflicts of interest existed at all.

References

[1] **GMC**, 1993. The report of the General Medical Council `Tomorrow's Doctors' (1): recommendations on undergraduate medical education. London. Accessed date April 2009 <www.gmc-uk.org/education/undergraduate/tomorrows_doctors.asp>.

[2] **Harden RM, Davis MH, Crosby JR.** The new Dundee medical curriculum: a whole that is greater than the sum of the parts. *Med Educ* 1997; **31**(4): 264-271.

[3] **Roff S, McAleer S, Ifere OS, Bhattacharya S.** A global diagnostic tool for measuring educational environment: comparing Nigeria and Nepal. *Med Teach* 2001; **23**(4): 378-382.

[4] **Genn JM, Harden RM.** What is medical education here really like? Suggestions for action research studies of climates of medical education environments. *Med Teach* 1986; **8**(2): 111-124.

[5] **Al-Hazimi A, Zaini R, Al-Hyiani A, Hassan N, Gunaid A, Ponnamperuma G, Karunathilake I, Roff S, McAleer S, Davis M.** Educational environment in traditional and innovative medical schools: A study in four undergraduate medical schools. *Educ Health (Abingdon)* 2004; **17**(2): 192-203.

[6] **Al-Hazimi A, Al-Hyiani A, Roff S.** Perceptions of the educational environment of the medical school in King Abdulaziz University, Saudi Arabia. *Med Teach* 2004; **26**(6): 570-573.

إدراك طلاب كلية الطب جامعة الملك عبدالعزيز لأنواع التعليم والتعلم (دراسة مقطعية مقارنة بين المنهج التقليدي والمنهج المطور)

عدنان عبدالله المزروع[1] و نصرة نعيم أيوب [1]، و باسم سلامه الديك [1]، وسمر محمد السقاف [2] و عبدالعزيز محمد بوكر

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جدة – المملكة العربية السعودية

المستخلص. كان منهج بكالوريوس الطب في جامعة الملك عبدالعزيز بالمملكة العربية السعودية منهجًا تقليديًا يعتمد بصفة أساسية على المحاضر، ونظام المقررات الدراسية، والتعليم المستند على المستشفى، مع عدم وجود أي من المقررات الاختيارية حتى عام ٢٠٠٧ – ٢٠٠٦م حيث بدأت كلية الطب المنهج المطور الذي يعتمد على نظام الأجهزة الدراسية المدمجة حول أجهزة الجسم. وقد أجريت هذه الدراسة لمقارنة إدراك الطلاب مدى رضاهم عن كلا المنهجين (التقليدي والمطور) من أجل الوقوف على بعض المشكلات التي تتطلب تدخلًا إصلاحيًا. وقد أجريت هذه الدراسة المقطعية المقارنة على طلاب السنة الثالثة (الذين درسوا المنهج المطور) وطلاب السنة الرابعة (الذين درسوا المنهج التقليدي) من خلال توزيع استبانة عليهم، حيث بلغت نسبة الاستجابة من طلاب السنة الثالثة حوالي ثمانين بالمائة (n = 277) من مجموع الطلاب، ونسبة الاستجابة من طلاب السنة الرابعة حوالي ستة وسبعين بالمائة

(n = 217). وعلى الرغم من وجود اختلاف ذي دلالة إحصائية لصالح طلاب السنة الثالثة الذين يدرسون بالمنهج المطور في كل محاور الاستبانة ما عدا المحور الخاص بالمكتبة، ومصادر التعلم إلا أن نسبة الرضا منخفضة بصفة عامة. مما يعنى أن هناك ضرورة قصوى لبذل المزيد من أجل التحسين.