

The educational environment of the undergraduate medical curriculum at Kuwait University

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Background: Educational environment of an institution affects the quality of learning. We aim to assess the educational environment of the undergraduate curriculum of Faculty of Medicine, Kuwait University (FOMKU).

Methods: A cross-sectional study was carried out during April 2014. The validated Dundee Ready Education Environment Measure (DREEM) questionnaire was e-mailed to 607 students. Mean scores of the main domains of the questionnaire, and for each item, were calculated, and their association with the students' background information was measured using Student's *t*-test (*P*-value of ≤ 0.05 was considered as the cut-off level of significance).

Results: Of 607 students, 117 (19.3%) completed the questionnaire. The total mean score for DREEM was 108.7/200 (54.3%). The mean score for students' perception of teaching, perception of teachers, academic self-perception, perception of atmosphere, and social self-perception were 25.2/48 (52.5%), 24.6/44 (55.9%), 18.4/32 (57.5%), 26.2/48 (54.5%), and 14.3/28 (51.0%), respectively. The highest mean score for an item of DREEM questionnaire was for "my accommodation is pleasant" (3.48 ± 0.75), while the lowest was for "there is a good support system for students who get stressed" (0.88 ± 0.86). The total mean score was not significantly different between the two phases of the curriculum, or among males and females; however, few significant differences among the main domains and items were noted.

Conclusion: Based on the learners' perspectives, the educational environment of FOMKU, was suboptimal. Medical educators in Kuwait should improve this environment in order to advance the quality of the delivered curriculum.

Keywords: medical education, undergraduate, medical students, environment, learning, teaching

Introduction

The quality of undergraduate medical education is affected by several factors; one of the most important determinants of an effective undergraduate medical curriculum is its educational environment.¹⁻³ The academic quality of any medical school/institution is reflected by its educational environment.¹⁻⁵ Therefore, several tools were developed to assess the educational environment of learners.⁶⁻¹¹ Assessing the medical educational environment provides medical educators with a comprehensive view of the delivered curriculum.^{4,5}

The undergraduate medical curriculum of the Faculty of Medicine, Kuwait University (FOMKU) is currently made up of three phases (I–III). Phase I (1 year) is a preprofessional program consisting of language and sciences courses. Phase II (3 years) consists of system courses that use a variety of methods including a series

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of problem-based learning cases, self-learning activities, didactic lectures, tutorials, laboratory exercises, and hospital visits aimed at stimulating active learning. The Faculty aims at promoting professional and behavioral development through the early introduction of students to the hospital environment at this phase. Phase III (3 years) is a clinical phase consisting of student clerkships through Medicine, Surgery, Community Medicine, Pediatrics, Obstetrics and Gynecology, and Psychiatry. This phase ends up with a preinternship program that aims at transitioning medical students to being practicing physicians.

During the past decade, the FOMKU had adopted a system based on case-triggered integrated curriculum for student intake. Previous studies revealed that changes in the curriculum are stressful on both the students and teachers, thus affecting the learning environment.^{6,12} To ensure successful implementation of a new curriculum, evaluation of the change should be done periodically. Medical educators of FOMKU attempted to evaluate and improve the new curriculum; however, a proper assessment of the educational environment of the new curriculum was not done before.^{13–17} Because the students' achievements, satisfaction, and success can be affected by a change in the educational environment, an assessment of the curriculum's environment is a must to ensure the delivery of high-quality teaching.^{1,4,18,19}

By conducting this study, we aim to provide an assessment of the educational environment of the new undergraduate medical curriculum at the FOMKU. We also plan to investigate if this environment varies between the three phases of the curriculum.

Subjects and methods

This cross-sectional study was conducted during April 2014, involving medical students at FOMKU. The Arabic version of the 50-item Dundee Ready Education Environment Measure (DREEM) questionnaire was used to assess the education environment in this study. This version was translated by the Centre for Medical Education of the University of Dundee and English Language Centre of Umm Al-Qura University.^{6,20,21} The DREEM inventory is composed of five subscales. These are perceptions of teaching/learning (12 items), perceptions of teaching (eleven items), academic self-perceptions (eight items), perceptions of atmosphere (12 items), and social self-perceptions (seven items). The items of DREEM were scored from 0 to 4 (0= strongly disagree; 1= disagree; 2= unsure; 3= agree; 4= strongly agree), except for nine negative items (numbers 4, 8, 9, 17, 25, 35, 39, 48, and 50) which were scored in reverse. A maximum

possible score of DREEM is 200. Data on the students' age, sex, year of study, and grade point average were also collected during the study.

The questionnaire was forwarded to the students through their university e-mails, and they were given 2 weeks to complete the questionnaire. Remainder e-mails were sent every third day. Phase II and III medical students were invited to participate in the study (total of 607 students); Phase I students were excluded from the study as they are at the preprofessional program, which included students of all health sciences studies (Medicine, Pharmacy, Dentistry, and Allied health).

This study was ethically approved by the Committee for The Protection of Human Subjects in Research of the Health Sciences Centre. The objectives of the study were explained to the students in the invitation e-mail. Their consents were taken, and it was made clear to them that the participation in the study was optional and there was no harm if they declined to participate. The name or any other information that might identify the participant identity was not obtained, ensuring confidentiality of the data.

The Statistical Package for Social Sciences Version 17.0 (SPSS Inc., Chicago, IL, USA) was used to analyze the collected data. Descriptive data, including frequencies, percentages, means, and standard deviations, of the variables were calculated. The association between qualitative and quantitative variables was assessed using the Student's *t*-test. A cut-off level for statistical significance using a *P*-value level of <0.05 was considered. The internal consistency of the Arabic translation of DREEM was assessed by measuring the Cronbach's alpha.

Results

Of the 607 students who were invited to participate in the study, 117 (19.3%) completed the questionnaire. Table 1 demonstrates the personal and academic characteristics of the students. The age of most of the participants was between 21 years and 22 years (44, 37.6%), ranging from 18 years to 27 years. Sixty-six (56.4%) students were females. A large number of the participants had a grade point average between 2.50 and 2.99 out of 4.00 (39.3%), while only eight (6.80%) had a grade point average more than 3.49. Sixty-two (53.0%) students were in Phase II of the curriculum.

Tables 2 and 3 show the mean scores of each of the main domains and specific items of the DREEM questionnaire. The tables also demonstrate the association between these domains and items, and the students' sex and phase of undergraduate medical curriculum. The mean scores for students'

Table 1 Characteristics of participating students (n=117)

Characteristics	Frequency	
	n	(%)
Age (years)		
≤20	37	(31.6)
21–22	44	(37.6)
≥23	36	(30.8)
Sex		
Male	51	(43.6)
Female	66	(56.4)
Grade point average (out of 4.00)		
2.00–2.49	34	(29.1)
2.50–2.99	46	(39.3)
3.00–3.49	29	(24.8)
3.50–4.00	8	(6.80)
Phase of study		
Phase II (basic sciences)	62	(53.0)
Phase III (clinical sciences)	55	(47.0)

perception of teaching, perception of teachers, academic self-perception, perception of atmosphere, and social self-perception were 25.2/48 (52.5%), 24.6/44 (55.9%), 18.4/32 (57.5%), 26.2/48 (54.5%), and 14.3/28 (51.0%), respectively. The highest mean score for an item of the DREEM questionnaire was for “my accommodation is pleasant” (3.48 ± 0.75), while the lowest score was for “there is a good support system for students who get stressed” (0.88 ± 0.86). The total mean score for DREEM was 108.7/200 (54.3%). Students in their Phase III of the curriculum reported a statistically significant higher mean score for academic self-perception ($P=0.047$) and social self-perception ($P=0.045$). Moreover, the mean score for the students’ social self-perception was significantly higher ($P=0.026$) among male students (15.3 ± 4.00) compared to female students (13.6 ± 3.86). Nevertheless, the total mean score was not significantly different between the two phases of the undergraduate medical curriculum, or male and female students. Significant differences of a few items of the educational environment between students in different phases of the medical curriculum, with sex differences are demonstrated in Tables 2 and 3. Cronbach’s alpha was 0.91 for the entire inventory.

Discussion

This study provides an analysis of the strengths and weaknesses of the educational environment of the FOMKU using the DREEM questionnaire. Because the quality of the educational environment of an institution affects the effectiveness of the delivered curriculum, the findings of this study are important for the development of medical education curricula in Kuwait.^{1–3} Moreover, the internal consistency of

the Arabic translation of DREEM inventory was excellent, meaning that the items of the questionnaire measure the same concept appropriately.

It was found that the overall mean score of the educational environment and the individual domains’ scores were around 50% of the possible maximum score, indicating that the current educational environment is suboptimal. Students’ perceptions of their academic achievements (ie, students’ academic self-perception) received the highest score out of the maximum possible score. These perceptions are comparable to other medical students worldwide.^{6,7,20–30} The total score of DREEM ranged approximately between 45.0% and 69.5% worldwide. The score of the FOMKU is very close to the scores of medical schools of the Middle East;^{20,21,24,27} whereas, it was lower than medical schools in the other parts of the world such as Dundee, Chile, Malaysia, and Nepal.^{6,7,23,25,26,28,29} This difference between schools of our region and schools of different regions is most likely because universities of the Middle East are more recently established, with less experience in teaching and other scholarly activities. The main domains of the educational environment varied between schools.^{6,7,20–30} In our study, students of Phase III of the curriculum reported a slightly better educational environment (not statistically significant) compared to students of Phase II. Such a finding is likely because our students enjoy studying clinical subjects more than basic sciences. This finding is different to what was found in other studies.^{29–31} Moreover, the number of the items of the DREEM questionnaire that were significantly different between males and females were comparable to Dundee students and less than Saudi students.²⁰ Nevertheless, the mean scores of these items were generally better among male students, similar to Saudi students and in contrast to Dundee students. This indicates that medical schools of Kuwait and Saudi Arabia provide a better educational environment for male students than female students, while the opposite was provided by Dundee University. There is no clear explanation for this finding. Medical educators in our institutions should investigate the reasons for such differences in order to ensure the presence of appropriate learning environments.

Although this study provided important data regarding the educational environment of the FOMKU, it has a few limitations. The response rate was less than 25%, which could have led to results that were not representative of all students. In addition, the reliability of the Arabic translation of the DREEM questionnaire, which was used in this study, has not been assessed before. There are no data about the educational environment of the old curriculum of this school.

Table 2 Mean Dundee Ready Education Environment Measure score per domain/item according to the phase of the undergraduate study

Domain – item	Overall		Phase II		Phase III		P-value
	Mean	SD	Mean	SD	Mean	SD	
Students' perception of teaching (out of 48)	25.2	6.42	25.2	6.53	25.2	6.35	0.961
I am encouraged to participate in class	2.17	1.06	2.10	1.13	2.25	0.99	0.424
The teaching is sufficiently concerned to develop my confidence	2.10	1.13	2.15	1.16	2.05	1.11	0.668
The teaching encourages me to be an active learner	2.00	1.19	1.87	1.26	2.15	1.10	0.214
The teaching is well focused	2.50	0.90	2.61	0.91	2.36	0.87	0.134
The teaching is sufficiently concerned to develop my competence	2.28	1.08	2.35	1.10	2.20	1.06	0.442
I am clear about the learning objectives of the course	2.47	0.92	2.50	0.90	2.44	0.94	0.709
The teaching is often stimulating	1.98	1.03	2.00	1.06	1.96	1.00	0.849
The teaching time is put to good use	2.09	1.08	2.16	1.07	2.00	1.09	0.422
The teaching is student-centered	2.33	1.11	2.37	1.13	2.29	1.10	0.700
Long-term learning is emphasized over short-term	2.32	1.14	2.19	1.24	2.47	1.02	0.189
The teaching is too teacher-centered	1.70	1.02	1.66	1.09	1.75	1.00	0.660
The teaching over-emphasizes factual learning	1.26	0.80	1.21	0.77	1.31	0.84	0.505
Students' perception of teachers (out of 44)	24.6	5.46	25.2	5.93	22.7	4.85	0.232
The teachers are good at providing feedback to students	2.52	1.01	2.58	0.97	2.45	1.05	0.501
The teachers have good communications skills with patients	2.43	0.95	2.39	0.95	2.47	0.96	0.628
The teachers are knowledgeable	2.73	0.76	2.65	0.79	2.82	0.72	0.221
The teachers give clear examples	2.68	0.85	2.66	0.89	2.71	0.81	0.762
The teachers are well prepared for their classes	2.54	0.94	2.44	0.99	2.65	0.89	0.211
The teachers provide constructive criticism here	2.09	1.04	2.11	0.98	2.07	1.12	0.836
The teachers ridicule the students	1.87	1.15	2.13	1.11	1.58	1.13	0.010
The teachers get angry in class	1.66	1.08	1.92	1.12	1.36	0.95	0.005
The teachers are authoritarian	1.59	1.04	1.87	0.93	1.27	1.06	0.002
The teachers are patient with patients	2.38	0.83	2.39	0.86	2.38	0.81	0.973
The students irritate the teachers	2.11	1.15	2.05	1.17	2.18	1.14	0.534
Students' academic self-perception (out of 32)	18.4	4.70	17.6	4.75	19.3	4.52	0.047
I am able to memorize all I need	1.45	1.04	1.34	1.06	1.58	1.01	0.207
Much of what I have to learn seems relevant to a career in medicine	2.67	0.96	2.56	1.03	2.78	0.85	0.221
I feel I am being well prepared for my profession	2.33	0.92	2.23	0.88	2.45	0.96	0.180
Last year's work has been a good preparation for this year's work	2.50	0.98	2.48	0.92	2.53	1.05	0.812
My problem-solving skills are being well developed here	2.45	1.06	2.32	1.16	2.60	0.94	0.160
I am confident about passing this year	2.06	1.26	1.97	1.36	2.16	1.14	0.402
I have learned a lot about empathy in my profession	3.12	0.83	2.98	0.88	3.27	0.76	0.061
Learning strategies which worked for me before continue to work for me now	1.79	1.09	1.68	1.07	1.91	1.11	0.253
Students' perception of atmosphere (out of 48)	26.2	7.22	26.4	7.12	26.0	7.39	0.761
The atmosphere is relaxed during lectures	1.96	1.10	1.95	1.18	1.96	1.02	0.953
I feel able to ask the questions I want	2.49	1.09	2.44	1.17	2.55	1.00	0.587
I feel comfortable in class socially	2.38	0.98	2.39	1.00	2.38	0.97	0.997
There are opportunities for me to develop interpersonal skills	1.85	1.15	1.92	1.19	1.78	1.12	0.522
The atmosphere is relaxed during seminars/tutorials	2.15	1.09	2.10	1.10	2.20	1.08	0.610
The enjoyment outweighs the stress of studying medicine	1.37	1.16	1.24	1.24	1.51	1.07	0.217
The atmosphere motivates me as a learner	1.74	1.20	1.71	1.26	1.76	1.14	0.809
I am able to concentrate well	2.46	1.05	2.44	1.10	2.49	1.00	0.776
The atmosphere is relaxed during the ward teaching	1.94	0.98	1.90	0.94	1.98	1.03	0.666
This school is well timetabled	2.52	1.20	2.69	1.18	2.33	1.20	0.100
I find the experience disappointing	2.40	1.23	2.42	1.24	2.27	1.22	0.521
Cheating is a problem in this school	2.96	1.13	3.16	0.94	2.73	1.28	0.038
Students' social self-perception (out of 28)	14.3	4.00	13.6	4.10	15.1	3.73	0.045
I have good friends in this school	3.28	0.95	3.29	0.97	3.27	0.93	0.920
There is a good support system for students who get stressed	0.88	0.86	0.84	0.93	0.93	0.79	0.582
I am too tired to enjoy this course	1.12	1.17	0.97	1.12	1.29	1.21	0.136
I am rarely bored on this course	1.18	1.07	1.10	1.02	1.27	1.13	0.378
My accommodation is pleasant	3.48	0.75	3.45	0.84	3.51	0.64	0.681
My social life is good	2.27	1.29	1.98	1.35	2.60	1.15	0.009
I seldom feel lonely	2.11	1.15	2.00	1.17	2.24	1.12	0.269
Total score (out of 200)	108.7	22.55	107.9	23.1	109.6	22.1	0.696

Abbreviation: SD, standard deviation.

Table 3 Mean Dundee Ready Education Environment Measure score per domain/item according to sex of the participants

Domain – item	Overall		Males		Females		P-value
	Mean	SD	Mean	SD	Mean	SD	
Students' perception of teaching (out of 48)	25.2	6.42	26.2	6.37	24.5	6.40	0.151
I am encouraged to participate in class	2.17	1.06	2.35	1.04	2.03	1.07	0.103
The teaching is sufficiently concerned to develop my confidence	2.10	1.13	2.16	1.12	2.06	1.15	0.650
The teaching encourages me to be an active learner	2.00	1.19	1.88	1.18	2.09	1.20	0.349
The teaching is well focused	2.50	0.90	2.49	1.01	2.50	0.81	0.954
The teaching is sufficiently concerned to develop my competence	2.28	1.08	2.35	1.07	2.23	1.09	0.535
I am clear about the learning objectives of the course	2.47	0.92	2.73	0.87	2.27	0.90	0.007
The teaching is often stimulating	1.98	1.03	2.16	1.08	1.85	0.97	0.107
The teaching time is put to good use	2.09	1.08	2.22	1.12	1.98	1.05	0.253
The teaching is student-centered	2.33	1.11	2.49	1.16	2.21	1.07	0.182
Long-term learning is emphasized over short-term	2.32	1.14	2.47	1.07	2.21	1.20	0.227
The teaching is too teacher-centered	1.70	1.02	1.75	1.00	1.67	1.09	0.684
The teaching over-emphasizes factual learning	1.26	0.80	1.14	0.78	1.35	0.81	0.158
Students' perception of teachers (out of 44)	24.6	5.46	25.0	6.19	24.3	4.85	0.474
The teachers are good at providing feedback to students	2.52	1.01	2.63	1.04	2.44	0.98	0.318
The teachers have good communications skills with patients	2.43	0.95	2.53	0.90	2.35	0.98	0.309
The teachers are knowledgeable	2.73	0.76	2.75	0.77	2.71	0.76	0.817
The teachers give clear examples	2.68	0.85	2.82	0.79	2.58	0.88	0.117
The teachers are well prepared for their classes	2.54	0.94	2.53	0.97	2.55	0.93	0.928
The teachers provide constructive criticism here	2.09	1.04	2.12	1.07	2.08	1.03	0.830
The teachers ridicule the students	1.87	1.15	2.10	1.17	1.70	1.11	0.061
The teachers get angry in class	1.66	1.08	1.59	1.08	1.71	1.08	0.539
The teachers are authoritarian	1.59	1.04	1.53	1.10	1.64	1.00	0.582
The teachers are patient with patients	2.38	0.83	2.59	0.80	2.25	0.82	0.019
The students irritate the teachers	2.11	1.15	1.84	1.21	2.32	1.01	0.026
Students' academic self-perception (out of 32)	18.4	4.70	19.1	5.09	17.8	4.33	0.134
I am able to memorize all I need	1.45	1.04	1.75	1.07	1.23	0.96	0.007
Much of what I have to learn seems relevant to a career in medicine	2.67	0.96	2.63	1.11	2.70	0.82	0.698
I feel I am being well prepared for my profession	2.33	0.92	2.45	0.90	2.24	0.93	0.225
Last year's work has been a good preparation for this year's work	2.50	0.98	2.45	0.95	2.55	1.01	0.607
My problem-solving skills are being well developed here	2.45	1.06	2.49	1.19	2.42	0.96	0.741
I am confident about passing this year	2.06	1.26	2.41	1.27	1.79	1.18	0.007
I have learned a lot about empathy in my profession	3.12	0.83	3.14	0.75	3.11	0.90	0.842
Learning strategies which worked for me before continue to work for me now	1.79	1.09	1.80	1.18	1.77	1.02	0.879
Students' perception of atmosphere (out of 48)	26.2	7.22	26.9	7.16	25.6	7.26	0.319
The atmosphere is relaxed during lectures	1.96	1.10	2.00	1.20	1.92	1.03	0.714
I feel able to ask the questions I want	2.49	1.09	2.63	1.17	2.38	1.02	0.222
I feel comfortable in class socially	2.38	0.98	2.39	1.06	2.38	0.92	0.942
There are opportunities for me to develop interpersonal skills	1.85	1.15	1.76	1.19	1.92	1.13	0.461
The atmosphere is relaxed during seminars/tutorials	2.15	1.09	2.20	1.13	2.11	1.05	0.658
The enjoyment outweighs the stress of studying medicine	1.37	1.16	1.31	1.14	1.41	1.19	0.662
The atmosphere motivates me as a learner	1.74	1.20	1.75	1.23	1.73	1.18	0.937
I am able to concentrate well	2.46	1.05	2.71	0.97	2.27	1.08	0.026
The atmosphere is relaxed during the ward teaching	1.94	0.98	2.04	1.00	1.86	0.96	0.337
This school is well timetabled	2.52	1.20	2.69	1.16	2.39	1.23	0.193
I find the experience disappointing	2.40	1.23	2.35	1.32	2.35	1.16	0.985
Cheating is a problem in this school	2.96	1.13	3.10	1.01	2.85	1.22	0.239
Students' social self-perception (out of 28)	14.3	4.00	15.3	4.00	13.6	3.86	0.026
I have good friends in this school	3.28	0.95	3.47	0.88	3.14	0.98	0.058
There is a good support system for students who get stressed	0.88	0.86	0.90	0.92	0.86	0.82	0.813
I am too tired to enjoy this course	1.12	1.17	1.20	1.25	1.06	1.11	0.536
I am rarely bored on this course	1.18	1.07	1.18	1.03	1.18	1.11	0.979
My accommodation is pleasant	3.48	0.75	3.57	0.78	3.41	0.72	0.255
My social life is good	2.27	1.29	2.59	1.27	2.03	1.27	0.020
I seldom feel lonely	2.11	1.15	2.35	1.11	1.92	1.15	0.045
Total score (out of 200)	108.7	22.55	112.5	23.2	105.7	21.7	0.108

Abbreviation: SD, standard deviation.

Therefore, studying the effect of the new curriculum on the educational environment at FOMKU is challenging.

Conclusion

In conclusion, the educational environment of the FOMKU was suboptimal based on the learners' perspectives. Medical educators in Kuwait should invest on improving this environment in order to improve the quality of the delivered medical education curriculum.

Disclosure

The authors report no conflicts of interest in this work.

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