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Medical students' perception of their educational environment at Imam Abdulrahman Bin Faisal University, Kingdom of Saudi Arabia

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Abstract:

OBJECTIVE: The purpose of this study was to investigate students' perception of the educational climate in a medical school in Dammam, Kingdom of Saudi Arabia (KSA). The difference in the perception of preclinical year students and clinical year students was also evaluated.

MATERIALS AND METHODS: This cross-sectional study was conducted among 2nd to 6th year students at the medical college of Imam Abdulrahman Bin Faisal University. "Dundee Ready Educational Environment Measure" (DREEM) was used to evaluate the educational environment.

RESULTS: Out of 518, 238 students participated in the study; participation rate of 45.9%. The average DREEM score was 112.38 with a SD of 22.4. Students' perception of atmosphere got the highest score (27.1 ± 6.7) of the five DREEM subscales. The 3rd year had the highest DREEM score compared to students of other levels, while the DREEM score of preclinical students was significantly higher than that of the clinical year students.

CONCLUSION: Perception of medical students about the educational climate was more positive than negative. Although the DREEM score and its subdomains showed a positive educational environment, students still mentioned some problematic areas that need to be addressed. Findings of this study could encourage other medical colleges in the KSA to focus on weak areas and address the issues raised by students, especially clinical year students.

Keywords:

Dundee Ready Educational Environment Measure, educational environment, students perception

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Introduction

The environment as perceived by students and teachers in an institution is known as the educational environment. In any institution, the educational environment plays an important role in students' learning and outcome.^[1] In addition, this environment significantly affects students' behavior, academic progress, and their attitude or behavior toward society.^[2-4] Because of its

importance, there is the need to evaluate the educational environment of every institution.

Different methodologies have been designed to perform this evaluation. This includes such aspects as the assessment of students' perception of the curriculum and its effectiveness in the quality of learning. Furthermore, it is also vital to evaluate the role of student-teacher relationship and teaching-style in students' learning.^[5]

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In the past few decades, educationists' interest has focused on the evaluation of the educational environment.^[6] They have designed different questionnaires comprising both qualitative and quantitative questions to perform this evaluation of an institution's educational environment.^[7,8] Henzi *et al.* investigated the learning environment of a dental college using the modified version of medical student learning environment survey.^[9]

Dundee Ready Educational Environment Measure (DREEM) is the most specific, best-known tool for investigating an educational environment. This questionnaire was developed by the Delphi panel specifically for medical and healthcare-related courses.^[7] DREEM has been used by many educationists worldwide to evaluate students' perception of their the institution and the actual environment of the institution to bridge the gap between perception and the actual environment.^[10] DREEM has been used in various medical colleges in the Kingdom of Saudi Arabia such as the medical colleges of Qaseem and King Abdulaziz University.^[11,12] To the authors' best knowledge, the DREEM tool has not been used to evaluate the educational environment of the medical college of Imam Abdulrahman Bin Faisal University (IAU). Consequently, the need for this study is to investigate students' perception of the educational environment in the medical college of IAU and study the differences in perception between preclinical and clinical year students'.

Materials and Methods

This cross-sectional study was done from January to May 2016 at the medical college of IAU. All male students enrolled in the 2nd to the 6th years could voluntarily participate in the study. Extra sessions were arranged for the conduct of the study; each class was invited to attend a separate session. First, students were informed of the purpose of the study and the questionnaire explained to give the students a good understanding of this purpose and the usefulness of each question. At the end of the session, the completed questionnaires were collected.

Since participation was voluntary, 100% participation rate was not met. The strength of the classes were 2nd, 3rd, 4th, 5th, and 6th year at 112, 103, 100, 93, and 110, respectively, and the total number of participants from each class were 69 (61.6%), 39 (37.9%), 25 (25%), 40 (43.6%), and 65 (59.1.8%), respectively. Hence, overall participation rate was 45.9% ($n = 238$).

The authors used McAleer and Roff^[13] DREEM tool to study the educational environment and their practical guide to interpret the results. DREEM contains 50 questions and an Arabic translated version from a

previous study was used to ensure that students clearly understood each question.^[14]

All questions were closed-ended and the score of each question ranged from 0 to 4. Zero for strongly disagree (SD), 1 for disagree (D), 2 for uncertain (U), 3 for agree (A), and 4 for strongly agree (SA). However, 9 out of 50 items (number 4, 8, 9, 17, 25, 35, 39, 48, and 50) were negatively phrased and scored 0 for SA, 1 for A, 2 for U, 3 for D, and 4 for SD. The maximum ideal DREEM score is 200.

The DREEM questionnaire covers five different areas of an educational institution. Each item of the questionnaire covered 1 of the 5 areas.

1. Students' perception of learning (SPL) has 12 items and a maximum possible score of 48
2. Students' perception of teachers (SPT) has 11 items with a maximum possible score of 44
3. Students' academic self-perception (SASP) has 8 items and the maximum possible score is 32
4. Students' perception of atmosphere (SPA) has 12 items and the maximum possible score is 48
5. Students' social self-perception (SSSP) has 7 items with a maximum possible score of 28.

Data were recorded and analyzed using Statistical Package for the Social Science version 23 Inc (SPSS, Chicago, IL, USA). Mean and standard deviations were calculated for all domains, total DREEM, and all individual item scores for all levels. A practical guide by McAleer and Roff^[13] was used to interpret the DREEM scores. Cronbach's alpha was used to check the internal consistency and reliability of all items and overall scores of the DREEM instrument, and the coefficient alpha obtained was 0.895 showing an adequate level of consistency. One-way ANOVA was used to identify the difference in mean scores of all 5 years in all domains. Where ANOVA showed significance, *post hoc* followed by Tukey's test was run for multiple comparisons. For this study, $P < 0.05$ was considered statistically significant.

Ethical approval was obtained from the Ethical Committee of IAU and informed written consent was obtained from all participants.

Results

The DREEM questionnaire was distributed to 518 medical students in the 2nd to the 6th year and was returned by 239 (response rate 45.9%) students. The number of students who participated from 2nd, 3rd, 4th, 5th, and 6th year was 69, 39, 25, 40, and 65, respectively.

The overall DREEM score for this college was 112.38 (56.2%) out of 200 [Table 1]. Total DREEM scores

Table 1: Individual items and subscales' mean and standard deviation scores based on student's responses

Expected DREEM	Mean±SD
I will be encouraged to participate during teaching sessions	2.2±1.1
The teaching will often be simulating	2.2±1.1
The teaching will be students centered	2.4±1.1
The teaching will help to develop my competence	2.6±1.0
The teaching will be well focused	2.3±1.2
I feel I will be well prepared for my profession	2.2±1.0
The teaching time will put to good use	2.0±1.4
The teaching will overemphasize factual learning	1.3±1.1
I will be clear about the learning objectives of the course	2.3±1.2
The teaching will encourage me to be an active learner	2.3±1.0
Long-term learning will be emphasized over short-term learning	2.2±1.0
The teaching will be too teacher centered	1.6±1.1
Students' perception of learning	25.5±7.2
The course organizers will be knowledgeable	2.5±1.0
The teacher will espouse a patient-centered approach to consulting	2.4±0.9
The teachers will ridicule the registrars	2.3±1.5
The course organizers are authoritarian	1.6±1.3
The course organizers will have good communication skills with patients	2.5±0.9
The course organizers will be good at providing feedback to registrars	2.1±1.1
The course organizers will provide constructive criticism here	2.3±1.1
The course organizers will give clear examples	2.4±0.9
The course organizers will get angry in teaching sessions	1.9±1.3
The course organizers will be well prepared for their teaching sessions	2.3±1.1
The students will irritate the course organizers	2.2±1.2
Students' perception of teachers	24.4±5.9
Learning strategies which worked for me before will continue to work for me now	2.4±1.2
I will be confident about my passing this year	2.6±1.1
The teaching will help to develop my confidence	2.2±1.1
Last year's work will have been a good preparation for this year's work	2.4±1.1
I will be able to memories all I need	2.4±1.0
I will learn a lot about empathy in my profession	2.6±1.0
My problem-solving skills will be well developed here	2.5±0.9
Much of what I have to learn will seems relevant to a career in health care	2.4±1.0
Students' academic self-perception	19.6±4.7
The atmosphere will be relaxed during consultation teaching	2.4±1.1
This course will be well timetabled	2.5±1.4
Cheating will be a problem on this course	2.2±1.3
The atmosphere will be relaxing during lectures	2.3±1.1
There will be opportunities for me to develop interpersonal skills	2.2±1.1

Contd...

Table 1: Contd...

Expected DREEM	Mean±SD
I will feel comfortable in teaching sessions socially	2.3±1.0
The atmosphere will relax during seminars/tutorials	2.3±1.0
I will find the experience disappointing	2.4±1.5
I am able to concentrate well	2.4±1.0
The enjoyment will outweigh the stress of the course	2.1±1.3
The atmosphere will motivate me as a learner	2.3±1.0
I will feel able to ask the questions I want	1.6±1.1
Students' perceptions of atmosphere	27.1±6.7
There will be good support system for students who get stressed	2.1±1.3
I will be too tired to enjoy the course	1.2±1.0
I will be rarely bored on this course	1.8±1.5
I will have good friends on this course	2.9±1.1
My social life will be good	2.7±1.0
I will seldom feel lonely	2.5±1.2
My accommodation will be pleasant	2.7±1.3
Students' social self-perceptions	15.8±3.4

DREEM=Dundee Ready Educational Environment Measure, SD=Standard deviation

for the various years were 110.64 (55.3%) for 2nd year, 126.5 (63.3%) for 3rd, 121.6 (60.8%) for 4th, 109.8 (54.9%) for 5th, and 103.81 (51.9%) for 6th year students [Table 2]. Table 2 also summarizes the perception of the students of the various years for all subdomains of DREEM and the significant difference of the mean score for each subscale was tested pairwise and reported in the last column of Table 2. For instance, 2:3 means that the mean scores of the 3rd and 3rd years for that particular subscale was significantly different.

Thirty-six items were scored between 2 and 3 by the 2nd year, which showed a good atmosphere which can still be enhanced. Two items scored above 3 (I have a good friend in this course and cheating will be problem) and the rest were below 2. The 3rd-year students scored 13 items above 3 and item 3, 12, 14, 24 scored >3.5. Eleven items scored <2, which means they should be addressed (48, 8, and 46 need greater attention). Students from the 4th year scored <2 for 12 items, which is alarming and scored >3 for 5 items (12, 13, 14, 24, and 50). Fifth-year students scored 13 items <2 (items 4, 9, 25, 48, and 49 need more attention) and only 3 items scored above 3 (15, 19, and 46). Students of the 6th year scored 17 items below 2 (4, 9, 14, 25 and 49 need to be strictly monitored) and only 2 items scored above 3 (I have good friends on this course, and my accommodation is pleasant).

DREEM score of preclinical year students' responses was 116.4 (±21.5) and 109.1 (±22.6) for clinical year students. The difference of the mean DREEM score between preclinical and clinical years was statistically significant with $P = 0.012$. The comparison of average scores in each area between preclinical and clinical years

was shown in Figure 1 and the difference in mean scores was significantly different in various areas. There was significant difference between preclinical and clinical year students' mean scores of SPL, SPT, and SPA, with $P = 0.02, 0.002, \text{ and } 0.0016$, respectively.

Discussion

The topic of the learning environment in medical education is of growing interest and concern to educational researchers since it helps to determine the effectiveness of the course curriculum.^[15] The result of this study showed a score of 112/200, which according to the McAleer and Roff practical guide^[13] is more positive than negative. In a previous similar study, conducted in the medical school of IAU (formerly University of Dammam) in 2013, the overall score was reported as 106, which is lower than that of the current study. A reason for this could be the lack of counseling services for students during that previous study period compared to the current one.^[16] On the other hand, the low response rate of 45.9% in this study is a drawback that was unavoidable.

Similar studies carried out in different medical institutions around the world have shown varying results. A study in 2006 in a large medical school in the UK^[17] showed a mean DREEM score of 124 while another

medical teaching school in the UK, in Birmingham, showed a mean score of 139.^[18] On the other hand, a study done in 2010 in Hormozgan University of Iran showed a lower score of 99.6.^[19] This variation in scores could be related to the use of traditional didactic curriculum in Iranian University compared to advanced system-based curriculum, divided into core subjects and specialty modules in medical schools of UK.^[17] Similar studies have been carried out in different parts of Saudi Arabia. In the medical school of King Abdul Aziz University, Jeddah,^[12] the DREEM score was reported as 102, while in the college of medicine, King Saud University, Riyadh,^[20] the score was 90, which is comparatively lower than our study and can be attributed to the traditional methods of teaching. Nonetheless, multiple studies from various parts of the world have shown DREEM scores similar to those of our study probably because of similar teaching methods.^[11,21,22]

The breakdown of the scores for this study was: SPL 25.5/48, SPT 24.24/44, SASP 19.5/32, SPA 27.08/48, and SSSP 15.8/28. According to the practical guide of McAleer and Roff,^[13] the SPL is viewed as more positive, SPT is movement in the right direction, SASP and SPA are on a more positive side, while SSSP is not too bad. In addition, none of the items was scored ≥ 3.5 , which indicates that there was no area that was making a real positive impact. Out of the 50 items, 44 items were scored between 2 and 3, with the highest mean score of 2.9 given to item 15 (I have good friends on this course) followed by the score of 2.7 for items 19 (My social life is good) and 46 (My accommodation is pleasant). This score indicates that these areas could be improved. On the other hand, the remaining six items had a score of ≤ 2 indicating that there were problem areas that needed to be monitored closely. Out of these six items, the lowest score was 1.2 for item 4 (I am too tired to enjoy this course). In a study done in Qassim University, Saudi Arabia,^[11] the highest score was given to item 15, which also scored the highest in the present study. Furthermore, the lowest score in the study in Qassim University was for item 4, which is similar to the findings of our study. This, therefore, indicates a similarity in the educational environment.



Figure 1: Preclinical and clinical year students' responses under each domain of Dundee Ready Educational Environment Measure

Table 2: Mean±standard deviation of overall Dundee Ready Educational Environment Measure and subdomains score by class year

Subscale	Mean±SD						Pairs having significant mean difference in each domain
	Overall DREEM	2 nd year	3 rd year	4 th year	5 th year	6 th year	
SPL (max-48)	25.5±7.2*	24.33±6.32	30.95±7.78	30.12±7.8	23.25±7.15	23.17±6.68	2:3, 2:4, 3:5, 3:6, 4:5, 4:6
SPT (max-44)	24.4±5.9*	24.61±6.08	27.51±4.51	24.52±4.74	23.55±5.68	22.85±6.34	3:6, 3:5
SASP (max-32)	19.6±4.7	20.12±5.189	19.21±3.87	20.2±4.01	19.78±5.34	18.83±4.63	None
SPA (max-48)	27.1±6.7*	26.62±6.03	31.97±4.815	30±5.97	26.63±7.21	23.78±6.08	2:3, 3:5, 3:6, 4:6
SSSP (max-28)	15.8±3.4*	14.96±3.82	16.9±3.32	16.76±2.77	16.59±3.04	15.18±2.99	2:3
Total	112.38±22.39	110.64±22.6	126.54±14.7	121.6±19.8	109.8±23.2	103.81±21.6	

*Significant at $P < 0.05$. SPL=Students' perception of learning, SPT=Students' perception of teachers, SASP=Students' academic self-perception, SPA=Students' perception of atmosphere, SSSP=Students' social self-perception, SD=Standard deviation, DREEM=Dundee Ready Educational Environment Measure

In many studies carried out in different parts of the world,^[17,19,23] item 3 (There is a good support system for students who get stressed) had scores of ≤ 2 , indicating that the counseling system of those institution was problematic. However, in the present study, the score of item 3 was 2.1 indicating that though not problematic, there was room for improvement. This difference in scores for item 3 in this study and other studies could be due to the ease of accessibility of stress counseling services for students of medical college of IAU.

In the present study, preclinical year students had a more positive perception of the educational environment than clinical year students. This positive perception was reflected in the subdomains, SPL, SPT, and SPA along with statistical significance. In the remaining domains SASP and SSSP, the perception of both groups (preclinical and clinical) were almost the same. This high score in nonclinical courses can be related to the motivation level of students as they were newly enrolled and were still exploring the educational environment. Results of the current study are comparable to the studies by Demirören *et al.*, Roff *et al.*, and Palés *et al.*^[1,24,25] They all found that students in the preclinical years had better perception of the educational environment compared to clinical year students.

In conclusion, students assessed the educational environment of this institution as more positive than negative. However, a few items in each subdomain except SPT had an average score of < 2 , which indicated that there was the need to pay greater attention to this area for improvement. Furthermore, preclinical students were more satisfied with the educational environment as compared to clinical year students. This part of the study finding should be monitored closely because clinical years' students are usually more preoccupied with a number of courses, clinical sessions, seminars, and workshops. Moreover, regression should have been done to minimize the possibility of confounding and anticipate important risk factors. Therefore, an institution should be on the alert to maintain an educational environment that would satisfy both junior and senior students equally.

Conclusion

- Perception of medical students of the educational climate was more positive than negative
- Students mentioned some problem areas that need consideration and improvement
- It is recommended that necessary measures should be taken in order to improve problem areas and these measures repeated later to measure the effects of those corrective measures taken.

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Conflicts of interest

There are no conflicts of interest.

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