

Validation of dundee ready education environment measure (DREEM) in Basrah college of medicine

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ABSTRACT

Background: The educational environment has a major impact on students' learning and educational activity hence it is important for evaluation and description. The objective of this study was to explore the quality of the educational environment in Basra College of Medicine.

Methods: The Arabic translation of the Dundee Ready Education Environment Measure (DREEM) was used to evaluate students' perception of the educational environment.

Results: The overall mean score was 93.57 and that for students' perceptions of learning 23.89, students' perceptions of teachers 16, students' academic self-perception 15.53, students' perception of atmosphere 20.5, and students' social self-perception 13.61. Gender was not statistically significant variable.

Conclusion: All results in every parameter of the educational environment inventory, whether total mean score or the five subscales, show presence of low values probably related to the traditional system of teaching which need consideration and solutions.

Key word: Medical education, students perception, DREEM

تطبيق مقياس دندي الجاهز للبيئة الأكاديمية في كلية طب البصرة

الخلفية: تؤثر البيئة التعليمية بشكل كبير على تعلم الطلاب وفعاليتهم المختلفة ومن هنا تبتثق أهمية تقييمها ووصفها. و الغرض من هذه الدراسة هو استطلاع البيئة التعليمية في كلية طب البصرة.

الطريقة: استخدمت الترجمة العربية لمقياس دندي للبيئة التعليمية لتقييم أدراك الطلبة لهذه البيئة في كلية طب البصرة. حيث تم توزيع قائمة الأسئلة أو الأسئلة على طلبة المرحلة الرابعة وكانت المشاركة طوعية بعد شرح أهمية المشاركة في هذا البحث.

النتائج: عدد المشاركين في البحث ٩١ طالبا حيث تم تحليل أستيبياناتهم فكان المقدار الكمي الكلي لمقياس دندي ٩٣,٥٧ وبلغ أنطباع الطلاب عن العملية التعليمية ٢٣,٨٩، وأنطباع الطلاب عن التدريسيين ١٦، أنطباع الطلاب عن التعلم الذاتي ١٥,٥٣، أنطباع الطلاب عن الجو التعليمي ٢٠,٥، أنطباع الطلاب الذاتي عن الأوضاع الاجتماعية ١٣,٦١. لم يكن هناك فرق أحصائي مهم بين الجنسين.

الاستنتاج: أظهرت كل النتائج سواء المعدل الكلي العام أو معدل الفروع الخمسة وجود نواقص تحتاج الى تدارك و حلول.

INTRODUCTION

Educational environment is difficult to be defined in a short, easy and concise way because of the complexity of medical educational environment. Genn and Harden explained that "this environment comprises a multitude of settings which includes lecture rooms, tutorial classes, laboratory and practical classes, hospital wards, out-patient clinics and general practice". In addition to this there are the "socialising agents which appear to have considerable power to influence the nature of the settings" including other students, lecturers, teachers from different departments, clinicians, advisors, educators,

administrators, paramedics in addition to the patients.^[1] The environment as suggested above is the most important manifestation for, and conceptualisation of curriculum and its study is vital and essential not only because it is a manifestation of the curriculum but because it is a determinant of the behavior of the medical students and teachers.^[2] This educational environment has a personality which can be described or categorised, so it can be stressed or relaxed, strict or lenient, competitive or even hostile.^[3] Many educators and researchers emphasize the importance of examining and assessing this environment because it has an

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important and powerful impact on students' learning, experiences, achievement, satisfaction and success.^[1,2,4] Many methods and instruments were developed since 1969 for estimating or measuring the educational environment and obviously they are old to cope with advancement and changes in the educational processes; in addition, most of them are not intended specifically for health professions/medical education. So as a refinement of its preceding methods or instruments, Dundee Ready Education Environment Measure (DREEM) was developed and validated at the centre for Medical Education, University of Dundee in 1997 by an international Delphi panel of medical educators.^[5] The DREEM inventory is a valuable diagnostic tool of educational environment at the undergraduate health and medical institutes. It is a generic, non-culturally specific, multi dimensional questionnaire which has been used worldwide and translated in over a dozen of languages including Arabic.^[6] It can demonstrate the perceived weaknesses and strengths in medical schools which can be used as basis of the remedial plan and useful in comparing the educational environments between different medical schools.^[7-9]

The objectives of this study were

1. To have an initial report about the educational environment perception.
2. To identify whether there is any gender differences in the student's perception.

METHODS

DREEM is a 50 item inventory, consisting of 5 subscales:

- a. Students' perceptions of learning (SPL)-12 items; maximum scores is 48
- b. Students' perceptions of teachers (SPT) - 11 items; maximum scores is 44
- c. Students' academic self-perceptions (SASSP) - 8 items; maximum scores is 32
- d. Students' perceptions of atmosphere (SPA) - 12 items; maximum scores is 48

e. Students' social self-perceptions (SSSP) - 7 items; maximum sores is 28.

Every statement scored by using a 5 point Likert-type scale as following; strongly agree=4, agree=3, unsure=2, disagree=1, and strongly disagree=0. Nine of the 50 items (item no. 4, 8, 9, 17, 25, 35, 39, 48 and 50) are negative statements and the score value will be reversed: strongly agree=0, agree= 1, unsure=2, disagree=3, and strongly disagree=4.

The DREEM has maximum score of 200 which indicates the ideal educational environment. A practical guide explained by Sean McAleer and Sue Roff was used to interpreting the results.^[10] (Appendix 1)

Appendix-1

The following is an approximate guide to interpreting the overall score:

- 0-50 Very Poor
- 51-100 Plenty of Problems
- 101-150 More Positive than Negative
- 151-200 Excellent

An approximate guide to interpreting the subscales is shown below:

Students' Perceptions of Learning

- 0-12 Very poor
- 13-24 Teaching is viewed negatively
- 25-36 A more positive perception
- 37-48 Teaching highly thought of

Students' Perceptions of Teachers

- 0-11 Abysmal
- 12-22 In need of some retraining
- 23-33 Moving in the right direction
- 34-44 Model course organisers

Students' Academic Self Perceptions

- 0-8 Feelings of total failure
- 9-16 Many negative aspects
- 17-24 Feeling more on the positive side
- 25-32 Confident

Students' Perception of Atmosphere

- 0-12 A terrible environment
- 13-24 There are many issues which need changing
- 25-36 A more positive attitude
- 37-48 A good feeling overall

Students' Social Self Perceptions

- 0-7 Miserable
- 8-14 Not a nice place
- 15-21 Not too bad
- 22-28 Very good socially

Interpretation of single items

- Item score ≥ 3.5 real positive points
- ≤ 2 problem area
- 2 – 3 area that could be enhanced

The Arabic version of DREEM questionnaire^[11,12] was used to ensure clarity of statements and complete understanding. The questionnaire was administered to fourth year students in the second half of academic year 2011-2012, after explaining the importance of participating in the study. All students were requested to answer the questionnaire on voluntary basis. The DREEM items were

analysed by using Statistical Package for the Social Sciences (SPSS) version 18. The study reliability which describes repeatability, consistency and stability of the test was investigated by measuring the internal consistency test using Alpha Cornbach's coefficient^[13]; Paired-Samples T Test was used to determine statistically significant differences between males and females students for the DREEM subscales scores and $P < 0.05$ was considered significant.

RESULTS

From the target population of 125 students, only 91 students were available at time of collecting the data, representing 72.8% of the target population. The respondents were 55(60.44%) females and 36(39.56%) males. The Alpha Coefficient reliability of this study is 0.78. The total mean DREEM score (TS) was found to be 93.57 and that of the subscales: for Students' Perceptions of Learning, Students' Perceptions of Teachers, Students' Academic Self-Perception, Students' Perceptions of Atmosphere and Students' Social Self Perceptions were 23.89/48, 20.16/44, 15.53/32, 20.5/48 and 13.61/28 respectively, (Table-1).

Table 1 .The total mean and subscales scores

Subclass	N	Minimum	Maximum	Mean	Std. Deviation
TS	91	50.00	131.00	93.5714	18.94093
SPL	91	11.00	33.00	23.8901	5.56866
SPT	91	3.00	34.00	20.1648	5.85427
SASP	91	2.00	26.00	15.3516	5.11506
SPA	91	2.00	38.00	20.5055	6.01918
SSSP	91	6.00	26.00	13.6154	3.75283
Valid N (listwise)	91				

While Table-2, shows the mean DREEM item scores, where students scored less than 2 for 26 items, between 2 and 3 for 23 items and only one item received more than 3 score.

Table 2. The mean item scores (items with values over 3 and under 2 are in bold)

Students' Perceptions of Learning

1	I am encouraged to participate in class	1.93
7	The teaching is often stimulating	1.93
13	The teaching is student-centered	2.06
16	The teaching is sufficiently concerned to develop my competence	1.91
20	The teaching is well focused	2.31
22	The teaching is sufficiently concerned to develop my confidence	2.76
24	The teaching time is put to good use	2.25
25	The teaching over-emphasizes factual learning	1.98
38	I am clear about the learning objectives of the course	2.45
44	The teaching encourages me to be an active learner	2.54
47	Long-term learning is emphasized over short-term	2.52
48	The teaching is too teacher-centered	1.74

Students' Perceptions of Teachers

2	The teachers are knowledgeable	2.50
6	The teachers are patient with patients	2.00
8	The teachers ridicule the students	0.87
9	The teachers are authoritarian	0.95
18	The teachers have good communications skills with patients	2.05
29	The teachers are good at providing feedback to students	2.20
32	The teachers provide constructive criticism here	1.52
37	The teachers give clear examples	1.93
39	The teachers get angry in class	1.75
40	The teachers are well prepared for their class	2.26
50	The students irritate the teachers	2.05

Students' Academic Self Perceptions

5	Learning strategies which worked for me before continue to work for me now	1.79
10	I am confident about my passing this year	1.86
21	I feel I am being well prepared for my profession	1.57
26	Last year's work has been a good preparation for this year's work	1.50
27	I am able to memorize all I need	1.50
31	I have learned a lot about empathy in my profession	2.78
41	My problem-solving skills are being well developed here	2.08
45	Much of what I have to learn seems relevant to a career in medicine	2.36

Students' Perception of Atmosphere

11	The atmosphere is relaxed during the ward teaching	1.64
12	This school is well time-tabled	2.40
17	Cheating is a problem in this school	2.08
23	The atmosphere is relaxed during the lectures	1.62
30	There are opportunities for me to develop inter-personal skills	1.29
33	I feel comfortable in class socially	1.87
34	The atmosphere is relaxed during seminars/tutorials	1.70
35	I find the experience disappointing	2.32
36	I am able to concentrate well	2.15
42	The enjoyment outweighs the stress of studying medicine	1.00
43	The atmosphere motivates me as a learner	1.29
49	I feel able to ask the questions I want	1.76

Students' Social Self Perceptions

3	There is a good support system for students who get stressed	3.04
4	I am too tired to enjoy this course	0.84
14	I am rarely bored on this course	1.20
15	I have good friends in this school	2.79
19	My social life is good	2.31
28	I seldom feel lonely	1.95
46	My accommodation is pleasant	2.63

There was no significant difference between male and female students in each of the educational subscales (Table-3).

Table 3. Gender difference

Paired samples test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the difference Lower Upper				
SPL	Male-Female	-.59083	2.35476	.67976	-2.08998 .90531	-.869	11	.403	
SPT	Male-Female	-.02625	.35912	.12697	-.27398 .32648	.207	7	.842	
SAP	Male-Female	.04000	.25690	.09083	-.17478 .25478	.440	7	.573	
SPA	Male-Female	-.03167	.30442	.08788	-.22508 .16175	-.360	11	.725	
SSP	Male-Female	.05143	.23039	.08708	-.16165 .26451	.591	6	.576	

P < 0.05 considered significant

DISCUSSION

DREEM which is a valuable diagnostic instrument was used to assess the current educational environment at Basrah Medical College as the educational environment analysis is vital in determining the success of curriculum.^[14] The reliability of this study measured by calculating the coefficient alpha and found to be 0.78 which is according to Richardson' guidelines of correlation and reliability is high.^[15] The mean total score of this study was 93.5 which indicates plenty of problems according to practical guide of McAleer and Roff.^[10] (Appendix-1). This result is expected where traditional system of teaching is used. A similar result 99.6, in the same range

of scoring between 51 and 100, was obtained in the medical school of Hormozgan University in Iran (2009) which also had a traditional system.^[16] In general a score of less than 120 is the expected score in the traditional system while much higher mean score found in modern, student-centred with integrated curricula medical schools as in British Columbia Medical school (main campus and two sites) 121.6 - 139.2, or the Dundee University Medical School with 139 score. However this can't explain everything as a high score can be obtained with a traditional curriculum as in a school from Nepal (2001)^[6] with a score of 130 which may reflect a more pleasant environment. Miles, et al

⁹(2012) suggested in their recent paper that it may be difficult to make comparisons between different studies because of lack of similarity in the methodology used. In this study, the subclasses scores were: students' perceptions of learning SPL 23.9/48, students' perceptions of teachers SPT 20.16/44, students' academic self-perceptions SASP 15.3/32, students' perceptions of atmosphere SPA 20.5/48 and students' social-self perceptions SSSP 13.6/28 (Table-3), while in a study from Iran, Hormozgan university^[16] the scores were 22.3/48, 24.6/44, 17.4/32, 25.9/48 and 14.6/28 respectively. These results are better than ours in the subclasses SPL, SASP and SPA and similar to our results in SSP and SPL although the traditional system is used. Al-Hazimi et al.¹⁸ showed that students from traditional schools rated their learning and teaching environment in addition to their academic, social-self perception and their atmosphere lower than students from the innovative medical school. According to McAleer and Roff practical guideline the teaching is viewed negatively as the cut off value is below 25, regarding the perception of teacher they are in need of some retraining, regarding academic self perception there are many negative aspects and regarding perception of atmosphere there are many issues that need changing while social self perception not a nice place. In addition no item got a mean score of ≥ 3.5 , (Table-2) which indicate positively rated mean. Twenty two items received mean scores between 2 and 3 and these items are aspects of the environment that could be enhanced. Twenty six items received mean scores ≤ 2 indicating problem areas. The highest three scored items were, Item no. 3 (There is a good support system for students who get stressed) which received a score of 3.04; item no. 5 (I have good friends in this school) with a score of 2.79 and item no. 31 (I have learned a lot about empathy in profession) with a score of 2.78. Only item 3, which belonged to the domain SSP, has secured 3.04 in this study but it is still

below 3.5 which is required to consider an item as strength of the institution. While the lowest three scores were: item no. 4(I am too tired to enjoy this course), item no. 8(The teachers ridicule the students) and item no. 9 (The teachers are authoritarian), which received scores of 0.84, 0.87, 0.95 respectively. The items with low scores are cause for concern as they represent problem areas that need solutions. Our study didn't show a statically significant difference between males and females in any subscale, This is in agreement to that reported by Aghamolaeli from Iran^[16] or Al-Ayed IH from Saudia Arabia^[19] or Khan et al from Pakistan^[17] or Till from Canada^[18] but is contrary to that reported by Deza et al from Argentina^[5] who found a statistically significant difference between genders with females more critical about the quality of teaching and the environment of the college or the study by Bassaw from Tinidad^[14] where females rated the educational environment higher than their male counterparts.

In conclusion, this is the first study done in Basrah to report students' perception of medical educational environment. Participants assessed the educational environment as having plenty of problems. This need consideration and active management for improvement across all five subscales or domains of the educational environment. This study provide baseline information although in a limited scale as it reflects 4th year students only, further studies are required to explore details of the educational environment across all levels of study in the college and to compare between our medical institutions. Thus it can be a starting point in formulating answers to either improve the present traditional curriculum or to go to a new curriculum.

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