Students' perceptions of the educational environment in an Iranian Medical School, as measured by The Dundee Ready Education Environment Measure

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Abstract

Learning environment is found to be important in determining students' academic success and learning. The goal of this study was to investigate the viewpoints of medical students toward learning environment based on The Dundee Ready Education Environment Measure (DREEM) at Rafsanjan University of Medical Sciences (RUMS). This descriptive study was conducted using the Persian DREEM questionnaire. All medical students in basic and clinical courses except internship students (fifth and sixth year) were approached to participate during the study period, of which 223 provided consent and completed the survey. Data were analyzed by SPSS-17, t-test and ANOVA statistical tests were used. The mean total score was 113.8 ± 17.31 (out of a maximum of 200, 56.9%) indicating relative satisfaction with the perceived environment. There were no individual areas of excellence. Some items scored consistently badly indicating cause for concern. The highest score were related to Academic Self-Perception (64.11%) and learning (57.2%) domains. The lowest score were related to Teachers (55.9%), Social Self-Perceptions (56.6%) and atmosphere (55.8%) domains. Basic science students perceived the environment to be significantly more positive than preclinical students ($p<0.05$). Native and married students perceived the environment to be significantly more positive ($p<0.05$). Second and fourth year students were significantly higher than the others ($P<0.01$). There was significant difference between mean scores of total mean DREEM and sub-domains by year of enrolment ($p=0.001$). This tool identified areas of concern within RUMS medical school. Further use of the DREEM as a monitoring tool would be useful to re-evaluate the environment following appropriate intervention. To create an appropriate educational environment and reduce the deficits in order to provide a better learning environment with facilitate and supportive system for students.

Introduction

Measurement of the educational environment comprehensively assesses what is happening, or how things are in the medical sciences schools[1]. Many universities to verifying students' need by viewing them as the main stakeholders in their own education[2]. The environment of an educational system determines the product, its quality and quantity as well as forges it into its own. Researchers over the years have worked to recognize the factors that contribute to the overall environment and to what extent. These, in order to be able to measure the climate, compare it with the product and then improve the product through improving the environment[3]. Studying the learning environment is important in improving the quality of an educational program[4]. The importance of the educational environment in student learning and enhances the ability of learning is widely acknowledged[5]. Educational climate makes a significant interest to student learning and a most important factor affecting students' motivation and learning outcomes their behavior, academic progress and sense of well-being[4,6]. For a medical student, the physical facilities, the clinical setting, the design and delivery of the curriculum, and the ability and motivation of the teachers are the main essentials that constitute the educational climate[5,7].

The Dundee Ready Education Environment Measure (DREEM)[1,4] has been used widely in countries to provide information on a variety of aspects of the learning environment in medical sciences schools[8]. The inventory was validated by students and is now being used extensively in order

to appraise and 'diagnose' undergraduate educational climates in the health professions, having been translated into Spanish, Chinese, Portuguese, Arabic, Swedish, Norwegian, Malay, Persian, Thai and used in several settings including the UK, Thailand, Canada, Middle East, Ireland, Norway, Indonesia, Malaysia, Australia, Sweden, Venezuela, Brazil, the West Indies, Sri Lanka, Oman, Iran, Yemen, Chili, Pakistan and Greek[8-16] such as medical, dental, nursing, midwifery, paramedical sciences and chiropractic learning environments. It has been used to identify weaknesses in curricula with a view to introducing change. One important use of the DREEM has been as a utility for international comparisons between higher education schools[13].

Although students' perceptions of their educational environment have been studied and reported around the world[1,8,10-13,17], we are unaware of any reports on medical students' assessment of their learning environments, either in Iran or at the Rafsanjan University of Medical Sciences (RUMS) at last years. Therefore, the purpose of this study was to measure the viewpoints of nursing students toward various aspects of their learning environment, which were compared based on age, gender, year of enrolment, marital status, and native and non-native status, using the Dundee Ready Educational Environment Measure (DREEM). This model was used to detect problem areas that should be remediated and to foster learning environments that may enhance academic achievement at the Rafsanjan University of Medical Sciences. Specifically. RUMS is a public medical sciences university that was established in 1986 and located in southeast of Iran. Current annual intake of students for medicine course is approximately 50 students per year. This would have a positive impact on their training and therefore the industry and service provided to the broader Iranian healthcare sector. Secondly, many of these findings may infer parallel trends for other Iranian or international institutions. Alternatively, the findings from such a study might be a useful point of reference for future DREEM studies that involve nursing and health science students.

We undertook this study to evaluate the student's perceptions of their learning environment, utilizing the Persian DREEM questionnaire[12,18]. The survey combined a version of DREEM (50 items) which assessed five major domains of educational environment (perception of learning, perception of teachers, academic self-perception, perception of atmosphere and social self-perception).

Materials and Methods

This study was conducted using a descriptive survey design method and a Persian standardized self report scale (DREEM)[12,18] was conducted. Ethics approval for the study was granted by the RUMS Standing Committee on Ethics in Research Involving Humans in 2010. The sample were all of 234 medical students in basic and clinical courses without internship (6th and 7th year) students. Only the students who had enrolled in the Rafsanjan medical college could participate in this study. Participants received an explanatory statement detailing the study and were informed that all data collected would remain anonymous. Students who were guest students were excluded from the study. Also incomplete questionnaires or false information led to the drop out of 8 students.

Participants' consent to take part in the study was inferred by their completion of the questionnaire. The DREEM, in the Persian language[12,18] and demographic information questionnaire were distributed to students towards the end of a lecture, a non-teaching member of staff facilitated the process and collected the completed surveys (Second semester of 2010-2011).

The DREEM questionnaire consists of 50 items, each scored 0-4 on a 5-point likert scale (4=strongly agree, 3=agree, 2=unsure, 1=disagree and 0=strongly disagree). There are nine negative items (numbers 4, 8, 9, 17, 25, 35, 39, 48 and 50) that scored in reverse manner. The base for the overall DREEM score is 200. The DREEM can also be used to pinpoint more specific strengths and weaknesses within the education climate[19]. To do this, it is necessary to examine responses to individual items. Items with a mean score of 3.5 or over are true positive points. Any item with a mean score of 2 or less should be examined more closely since this indicates a problem area. Items with a mean of between 2 and 3 indicate aspects of the education climate that are receptive to enhancement[20]. The questionnaire generates an overall "score" for the course. The statements may also be subdivided to provide an indication of student perceptions of 5 separate elements of the educational environment (Table I).

Analysis of data was performed using computer software (SPSS v.16, SPSS Inc., Chicago, IL). Continuous variables were summarized as means and standard deviation (SD), and the independent T-test, one-way analysis of variance (ANOVA) and post-hoc multiple comparison by Tukey method were also utilized. In this study, $p \leq 0.05$ was considered as statistically significant.

Results

A total of 234 medical students completed the questionnaire. In the demographic data of the respondents (Table II). The highest percentage was related to the group aged 17-20 (23%). Their ages ranged from 17 to 39 years, with a mean age of 20.52 ± 3.59 years. Most of the respondents were single 214 (91.46%) and female 128 (54.7%) and in basic sciences course 43.6% (102). The mean total DREEM score was found to be 113.8 ± 17.31 out of a maximum of 200, corresponding to 56.9% of the maximum score (95% CI: 108-117) this represents as more positive than negative educational environment. The grouped mean students' perception of learning was 27.4 ± 5.7 (57.2%), the pooled mean students perception of teachers and social self-perception were 24.6 ± 3.9 (55.9%) and 15.7 ± 3.3 (56.07%). The mean score were 26.8 ± 5.1 (55.8%) for perception of atmosphere and 20.5 ± 4.1 (53.94%) for academic self-perception. Students' perception of learning and social self-perception generated the highest individual domain scores conversely perception of atmosphere and academic self-perception produced the lowest individual domain scores.

Eight items had mean scores of less than two, with a usual of one to two items in each domain except academic self perception domain. The maximum mean score was 3.1 (item 1: I am encouraged to participate in class), and Some items scored consistently badly indicating cause for concern, for example lack of a support system for stressed students, and school time-tabling, feedback from teachers and memorization of facts. A total of 38 items had aspects of the learning environment climate that could be enhanced.

The female students recorded high scores in the social self-perceptions and perception of learning subscales (p=0.01) but the total scores of two groups do not differ significantly. The native students scores were higher than non native students in all fields significantly (p=0.05). DREEM scores on the academic self-perceptions and perception of atmosphere subscales in married students were significantly higher singles (P<0.01) (Table III).

There was significant difference between mean scores of total mean DREEM and sub-domains by year of enrolment (p=0.001). Scores for second and fourth year students were significantly higher than those of the others students. The Year two groups had the highest score, with a mean of 124.93. The Year one, three, four and five group Students' overall mean DREEM scores were in the range of 102 to 115.14 (Table IV). There was significant difference between mean scores of total mean DREEM and sub-domains except Social self-perceptions domain by students course (p<0.05). Students on the basic Sciences and pathophysiology course rated the educational environment more highly than students in the clinical course (Table V).

Table I: The approximate guide to interpreting DREEM Scores [1].

Total score	Students' perception of teachers	Students' academic self-perceptions
0-50 Very poor	0-11 Abysmal	0-8 Feelings of total failure
51-100 Plenty of problems	12-22 In need of some retraining	9-16 Many negative aspects
101-150 More positive than negative	23-33 Moving in the right direction	17-24 Feeling more on the positive side
151-200 Excellent	34-44 Model teachers	25-32 Confident

Students' perception of learning	Students' social self-perceptions	Students' perception of atmosphere
0-12 Very Poor	0-7 Miserable	0-12 A terrible environment
13-24 Teaching is viewed negatively	8-14 Not a nice place	13-24 There are many issues which need changing
25-36 A more positive perception	15-21 Not too bad	25-36 A more positive atmosphere
37-48 Teaching highly thought of	22-28 Very good socially	37-48 A good feeling overall

Table II: Demographic Details of the Medical Students

Parameter	n	%
Gender		
Male	106	45.3
Female	128	54.7
Marital status		
Single	214	91.5
Married	20	8.44
Year of enrolment		
One	53	22.6
Two	49	20.9
Three	50	21.4
Four	42	18
Five	40	17.1
Native & non native status		
Native	95	40.5
Non native	139	59.5
Course type		
Basic Science	102	43.6
Clinical Science	132	56.4
Age (Year)		
17-20	123	52.6
20-23	74	31.6
+23	37	15.8
Mean age (SD, years)=20.52 (3.59)		
Total	234	100

Table III: Mean (Standard Deviation) subscale and total DREEM scores for Medical students of RUMS in 2010/11 by Marital Status (N=234).

Subscale	Single	Married	Total	p
Perception of learning (max=48)	26.49(5.15)	25.5(0.8)	27.4(5.7)	0.5
Perceptions of teachers (max=44)	25.0(3.9)	24.4(2.7)	24.60(3.9)	0.6
Academic self-perceptions (max=38)	19.5(3.9)	24.5(3.1)	20.5(4.1)	0.001
Perceptions of atmosphere (max=48)	27.5(5.0)	31.3(3.9)	26.8(5.1)	0.02
Social self-perceptions (max=28)	14.8(4.0)	14(1.9)	15.7(3.3)	0.4
Total DREEM	113.54(17.48)	119.7(11.85)	113.8(17.3)	0.2

Table IV: Mean (SD) subscale and total DREEM scores for medical students of RUMS in 2010/11 by year of enrolment (N=234).

Subscale	1th year	2[ed] year	3rd year	4th year	5th year	Total Mean (percent)	P-value
Perception of learning (max=48)	26.4(5.04)	26.54(5.5)	23.53(4.1)	25.75(0.8)	24.8(6.2)	27.4(57.2)	0.001
Perceptions of teachers (max=44)	26.2(3.8)	25.97(2.9)	21.3(1.9)	25.75(4.9)	21.9(6.8)	24.60(55.9)	0.001
Academic self-perceptions (max=38)	18.8(3.9)	22.5(3.3)	17.01(3.2)	20.51(4.9)	19.7(6.1)	20.5(64.1)	0.001
Perceptions of atmosphere (max=48)	25.82(4.54)	30.61(5.4)	26.1(4.8)	28.8(3.5)	25.2(7.6)	26.8(55.8)	0.001
Social self-perceptions (max=28)	13.6(3.9)	16.8(4.1)	14.3(2.3)	14.8(4.8)	14.3(4.3)	15.7(56. 6)	0.001
Total DREEM	111.16(16.8)	124.93(16.9)	102.04(10.3)	115.14(13.9)	106.1(22.1)	113.8(56.9)	0.001

Table V: The DREEM domains and overall scores (mean and SD) for medical students of Rafsanjan University Medical science students in 2010/11 by student's Course (N=234).

Course Subscale (Domains)	Basic Science	Pathophysiology	Clinical	P-value
Perception of learning (max=48)	25.5(6)	23.5(5.3)	18.5(3.8)	0.03*
Perceptions of teachers (max=44)	22.4(6.4)	20.7(5.9)	18.6(5.3)	0.05*
Academic self-perceptions (max=38)	16.6(5.1)	18.6(6)	16.4(3.7)	0.03*
Perceptions of atmosphere (max=48)	28.8(6.1)	26.9(7.1)	22.5(5.3)	0.03*
Social self-perceptions (max=28)	15(4)	13.8(4.5)	12.1(4.7)	0.06
Total DREEM Score (max=200)	117.6(24.4)	115.2(26.3)	113.9(18.7)	0.05*

* Significantly different at the P<0.05 level.

Discussion

There has been growing interest and concern about the role of the learning environment for medical education. We have used the Dundee Ready Education Environment Measure (DREEM) in 'diagnosing' the educational environment of medical school of Rafsanjan university of medical sciences. Students were interested in completing the inventory as evidenced by the good response rate (93.5%). The overall mean DREEM score for our medical school was found to be 113.8/200 (56.9%). According to the practical guide of McAleer and Roff[1] indicate as more positive than negative educational environment. DREEM overall scores for a medical schools in Kasturba Medical College(India)[20] Chili[14], Kuwait[9], Sweden, Jamaica, UK(Birmingham), Saudi Arabia (Umm Al-Qura university, King Abdul-Aziz university)[19] United Arab Emirates (2011)[21] Canada[22] Nigerian medical school and Nepalese medical school[1] and for Trinidad medical school[23], Iranian nursing school[24] ,Malaysian nursing[25] and medical[26] schools and Sri Lanka medical school[27] were reported as 107, 108, 130, 118, 102, 143, 127.5, 106, 109.9, 145, 102.80 ,114.2,129.30,129,139 respectively[1,9,14,16]. One of the largest samples (n=968) reported an overall mean DREEM score of 128.80 for medical students in the UK[10]. The mean DREEM score for a medical school in India and Australia, was reported as 107.44/200, 137[13,20]. There are also a few studies which have confirmed higher overall mean DREEM scores. Nepal (130), Saudi Arabia (131), Dundee university (139), in a Malaysian private nursing colleges by Intan, and In a series of UK learning environment studies recorded the highest mean DREEM score 142.91[1,28,16,29,30]. Roff et al. 2001 in another study reported in the UK at different teaching hospital centers a relatively high mean DREEM score of 139.00[1].

The score of 113.8 out of 200 is more positive than negative though not "excellent" (excellent=an overall mean of 151-200). It is clear therefore that no learning environment is without weakness, since DREEM scores of above 139 have not been observed in the literature to date. Survey results suggest that the medical school of RUMS has achieved a more positive than negative status, which is just a level below the highest category of achievable scores. Students of the innovative curricula (pbl) as Birmingham and Dundee tend to show more satisfaction with their educational environments compared to students of the traditional curricula. Higher DREEM scores tend to indicate more student-centred curricula, while those offering conventional curricula commonly score less than 120 out of 200[1,12,26].

Our sample's mean perceptions expressed as a percentage showed that highest score were related to social self perception (56.07%) and learning domains (57.2%). The lowest score was related to Academic Self-Perception (53.94%) and atmosphere (55.8%). These mean scores indicate that the student's consideration there was area for improvement in the aspects being measured by the DREEM in their school. This picture is similar to that in the validated DREEM study[16,21].

There were not statistically differences between genders in whole DREEM score but with regard to the individual subscales, perception of learning and social self perception were the areas that showed difference between genders as same as results of a study in Australia[13], Sweden[31], Nigeria[1] and was different with result of Middle East[32], Trinidad[23], Sri- lanka[27] and India[33] that reported no significant gender differences for females and males respectively[34]. This suggests that the female students perceived factors such as curriculum, structure, focus and goals more positively than their male counterparts. The extent to which this trend, and indeed the trend that females perceived their course environments more favorably overall, can be generalized to other institutions is not clear. On one hand, there is long-standing evidence that males and females typically exhibit different learning styles[35] which could partly explain differences in the way learning, and the environments generally, are perceived in the present study. Second year students perceived the full instrument and its subscales as better, compared to other students. Students on the basic Sciences and pathophysiology course rated the educational environment more highly than students in the clinical course. One possible explanation is that the basic sciences and pathophysiology course students did not complete three items of DREEM questions related to clinical contact. In an Indian medical School[25], the total DREEM domain score was higher for First year students than students receiving clinical teaching, same as this study, students on the basic sciences and pathophysiology course received a higher total DREEM score than clinical course students during the first year. The findings are in line with those of Kulliyyah of Nursing, IIUM [25] and Hla et al. results[36], who noted a trend for reduced scores in the senior years as same as married, non native and preclinical students. It was suggested that this trend could be due to the fact that students genuinely believed that the learning environment was deteriorating, and thus were psychologically tired of being a student and looking forward to leaving student life, further analysis of each course separately, and perhaps individual items, is required to help explain these differences.

Conclusion: In conclusion, participants assessed the educational environment as average and positive. Regarding the students' perceptions of learning, teaching was viewed positively; regarding their perceptions of teachers, the school was in moving in right direction; regarding their academic self perceptions, Feeling more on the positive side; regarding their perceptions of the atmosphere, Feeling more positive; and regarding the students'

social-self perceptions, Not too bad. Therefore, improvements are required across all five domains of the educational environment toward a high quality educational environment. The quality of the educational environment is crucial for effective learning, and students' perceptions of their educational environments are a useful basis for modifying and improving educational quality, as the learning environment affects student motivation and achievement, it is important to get feedback from the students on how they are experiencing their learning environment.

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