STUDENTS' PERCEPTION OF EDUCATIONAL ENVIRONMENT AT ARMY MEDICAL COLLEGE, RAWALPINDI: ASSESSMENT BY DREEM (DUNDEE-READY EDUCATION ENVIRONMENT MEASURE)

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ABSTRACT

Objectives: To assess the students' perception of educational environment of Army Medical College, Rawalpindi, Pakistan and to determine gender difference in this perception.

Study Design: A survey-based study

Place and Duration of Study: Army Medical College, Rawalpindi, Pakistan from Jan 2012-June 2012.

Participants and Methods: Dundee Ready Education Environment Measure (DREEM) questionnaire was administered to 805 1st year to 5th year MBBS students of AM College, after written and informed consent. DREEM total and subscores were calculated according to Likert scale. Comparison was made for responses of male and female students as well as among students of each class by student's t test and ANOVA.

Results: Valid responses were 647 out of 805 (response rate = 80.17%). The education climate was rated as more positive than negative determined by overall DREEM scores (mean 116.57 ± 24.96). Students perceptions of learning, teachers, academic self-perception, atmosphere and social self-perception were determined by sub scales and responses were found to be more on the positive side though sub scores of academic perception were highest (19.32 ± 5.25) and those of social self-perception were lowest (15.42 ± 3.85). There was no statistical difference in perception of male and female students (p = 0.12). The sub scores were significantly higher in 1st year students but all other classes had almost similar scores (p = 0.06) on ANOVA and post hoc tukey's test.

Conclusion: Army Medical College as an institution has a positive education environment where most of the students feel positive about education climate, learning environment, teachers, their own academic achievements, institutional atmosphere and their social well-being.

Keywords: Dundee Ready Education Environment Measure, Medical students, Pakistan.

INTRODUCTION

Education system in every institute require constant quality assessment, monitoring of performance based outcome and estimation of students' perception of education climate. Recent trends of enhanced quality assurance, integrated models of curricula and student-centered teaching and learning in health profession education have stimulated the need to scientifically monitor the system as an ongoing process. In this regard, it is imperative that insight of students' perception of learning environment is determined. Learning environment is defined as everything that is happening in the classroom, department and/or in the university[1,2]. Many studies have proven scientifically that for effective learning, the quality of educational environment plays crucial role and educational climate can be improved based on assessment of students' perception of this climate[3,4].

The Dundee Ready Education Environment Measure (DREEM) is a questionnaire based diagnostic tool for quantitative assessment of students' perception of educational environment of medical institutions and other health training set-ups and was published in 1997[5]. The instrument has been validated by many international studies as a non-culturally specific reliable tool for medical schools[6-9], for comparing curricula[10-12], for comparison of educational climate in different medical institutions[7,13-15] and gender difference in educational environment

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perception[3,16,17]. DREEM tool has been validated by many international[18] and national studies[19].

Pakistan is a country with limited resources and has an education system requiring meaningful reforms. We need to identify the factors which affect the educational environment which plays a key role in learning atmosphere of an educational institute. In this regard, it is useful to have an instrument to identify factors in educational environment which may play role in making the educational climate positive, motivating, productive and conducive.

The present study was planned to determine the perception of students of Army Medical College, Rawalpindi regarding educational environment of the institution and to determine any gender difference in this regard.

PARTICIPANTS AND METHODS

This descriptive study was conducted at Army Medical College (AM College), Rawalpindi, Pakistan from Jan 2012 – June 2012. The study population comprised all MBBS students from 1st year till final year at AM College, Rawalpindi.

Participants were selected by non-probability convenience sampling technique. The BDS students were excluded from the study as their maximum academic activities take place at Armed Forces Institute of Dentistry. The total number of MBBS students at AM College, at the time of the study was 901. 'DREEM' structured questionnaire was administered to a total of 807 students of MBBS available at the time of study. The students were thoroughly briefed about the purpose of study and data collection process. They were assured of their anonymity by giving them the option to not mention their identity on the questionnaire and were also assured of the confidentiality of the data. All students' participation was voluntary and written and informed consent was taken from the participants. Data was collected class-wise, in one session and was completed in 45-50 minutes in each class[20]. Phrases and educational terms such as "empathy" and "factual learning" were

explained beforehand. Out of 807 students, a total of 647 completely filled the questionnaires. Incomplete questionnaires were not included in

Table-1: Mean, SD and range of Dundee ready education environment measure (DREEM) total scores of students.

Participants (MBBS)	DREEM Total scores (Mean + SD)	DREEM Total scores Range (Max 200)
All students n = 647	116.57 + 24.96	44 – 185
*All male students n = 328	118.3 + 27.13	37 – 178
All female students n = 319	115.16 + 24.19	49 – 165
**1st year students n = 184	130.23 + 24.96	49 - 179
2nd year students n = 133	122.78 + 19.13	55 - 165
3rd year students n = 158	104.98 + 25.69	38 - 165
4th year students n = 105	104.29 + 23.47	50 - 153
5th year students n = 67	115.37 + 20.62	49 - 162

*p value for gender is 0.12, **p value for MBBS classes is 0.001 between 1st year and other classes.

the study.

The DREEM inventory was used as the instrument of choice to evaluate the medical education environment of AM College. The inventory comprises 50 items. Each item is scored on a five-point Likert scale, where 0=strongly disagree (SD), 1=disagree (D), 2=unsure (U), 3=agree (A), 4=strongly agree (SA) making for a possible total score of 200. There are nine negative statements (9 out of 50: Q 4, 8, 9, 17, 25, 35, 39, 48 and 50) scored SA=0, A=1, U=2, D=3, SD=4. Except in the case of negatively marked items, the higher the score, the better the item is perceived. The guide provided for interpreting

the scores indicates that a total score of 51-100 represents 'plenty of problems' in educational environment, a score of 101 to 150 indicates 'more positive than negative' while a total score above 150 indicates 'excellent' and maximum score of 200 indicates 'ideal' educational environment. In DREEM, there are five sub scales namely; perceptions of learning, perceptions of teachers, academic self-perceptions, perceptions of atmosphere and social self-perceptions by medical students. Students' perception of learning is determined by 12 items (Q. 1, 7, 13, 16, 20, 21, 24, 25, 38, 44, 47 and 48) with maximum score of 48 for this sub scale. The guide for interpretation is as follows: sub scores 0-12; very poor, 13-24; teaching viewed negatively, 25-36; A more positive perception and 37-48; teaching highly thought of. Students' perception of teachers is determined by 11 items (Q. 2, 6, 8, 9, 18, 29, 32, 37, 39, 40 and 49) with maximum score of 44 for this sub scale. The guide for interpretation is as follows: sub scores 0-11; abysmal, 12-22; in need of some re-training, 23-33; moving in right direction and 34-44; model course teachers/organizers. Students' academic self-perception is determined by 8 items (Q. 5, 10, 22, 26, 27, 31, 41 and 45) with maximum score of 32 for this sub scale. The guide for interpretation is as follows: sub scores 0-8; feeling of total failure, 9-16; many negative aspects, 17-24; feeling more on the positive side and 25-32; confident. Students' perception of atmosphere is determined by 12 items (Q. 11, 12, 17, 23, 26, 27, 30, 33-36, 42, 43 and 50) with maximum score of 48 for this sub scale. The guide for interpretation is as follows: sub scores 0-11; a terrible environment, 13-24; there are many issues needing change, 25-36: a more positive attitude and 37-48; a good feeling overall. Students' social self-perception is determined by 7 items (Q. 3, 4, 14, 15, 19, 28 and 46) with maximum score of 28 for this sub scale. The guide for interpretation is as follows: sub scores 0-7; miserable, 8-14; not a nice place, 15-21: not too bad and 22-28; very good socially 21. Each item with mean score of less than 2 should be closely monitored.

Approval to conduct and publish the study was obtained from the institution.

Data analysis

All data was analyzed using SPSS version 16.0. DREEM total scores and sub scores for five domains of DREEM inventory were measured and mean standard deviation (SD) were calculated. Independent samples' test was applied to compare the scores and sub scores among male and female students and between various MBBS classes. Scores were compared using ANOVA followed by post-hoc tukey's test. The internal consistency or reliability of the inventory was determined using Cronbach's alpha. A p value <0.05 was considered as significant.

RESULTS

The response rate of total students was 647/807 (80.17%). Average age was 20.34 ± 1.56 years (range = 17-25). Among 647 MBBS students, 328 (50.7%) were males and 319 (49.3%) were females. The Cronbach's alpha coefficient for the overall DREEM was 0.895 and for five subscales the range was 0.853 - 0.9.

Average DREEM total scores of all students are shown in table-1. Same parameters are also measured separately in male and female students as well as in each MBBS class from 1st to 5th year (table-1). The overall educational environment of AM College is found to be more positive than negative. The perception of educational environment by both male and female students was found to be positive and there was no statistically significant difference (p = 0.12) in both genders. When analyzed separately for students of each MBBS class, the educational climate was perceived as positive by all classes; overall scores of 1st year MBBS class being the highest and significantly different from all other classes.

Among DREEM sub-scores, students' perception of learning at AM College was positive when measured overall, in males and females separately as well as by students of each MBBS class (table-2).

Student's perception of teachers is also found to be 'moving towards positive direction' as per DREEM interpretation protocol. The finding is consistent when measured in all

Students' perception of overall conducive atmosphere of AM College showed mixed results (table-2). When measured in all students; separately in male and female students; and in

Table-2: Mean, SD and range of Dundee ready education environment measure (DREEM) total and sub scores of students.

Participants	DREEM Sub Scores				
	Perception of learning by medical students Mean ± SD (range)	Perception of teachers by medical students Mean ± SD (range)	Academic self-perception by medical students Mean ± SD (range)	Perception of atmosphere by medical students Mean ± SD (range)	Social self-perception by medical students Mean ± SD (range)
	Maxi score= 48	Maxi score= 44	Maxi score= 32	Maxi score= 48	Maxi score= 28
All students n = 647	28.07 + 6.58 (8 – 44)	26.14 + 6.5 (6 – 43)	19.32 + 5.25 (3 – 32)	27.69 + 8.08 (1 – 46)	15.42 + 3.85 (2 – 25)
All males n = 328	28.63 + 6.98 (8 – 43)	25.94 + 6.79 (6 – 42)	19.84 + 5.55 (4 – 32)	28.08 + 8.47 (5 – 46)	15.52 + 3.63 (5 – 23)
All females n = 319	27.04 + 6.03 (10 – 42)	26.34 + 6.2 (9 – 42)	18.81 + 4.9 (3 – 32)	27.08 + 7.78 (1 – 45)	15.07 + 3.85 (2 – 25)
1st year students n = 184	31.06 + 6.01 (13 – 44)	28.96 + 6.19 (13 – 43)	21.61 + 5.11 (7 – 32)	31.51 + 7.95 (5 – 46)	16.54 + 3.84 (5 – 24)
2nd year students n = 133	29.24 + 4.68 (13 – 42)	28.57 + 5.37 (10 – 42)	20.27 + 4.75 (6 – 32)	28.73 + 7.14 (12 – 45)	15.92 + 3.42 (2 – 22)
3rd year students n = 158	24.41 + 6.52 (8 – 40)	23.61 + 6.43 (6 – 38)	17.22 + 5.08 (4 – 31)	24.41 + 7.99 (1 – 45)	14.7 + 3.9 (5 – 25)
4th year students n = 105	25.68 + 6.92 (10 – 39)	22.64 + 5.65 (9 – 36)	17.56 + 4.9 (3 – 29)	24.25 + 8.38 (6 – 43)	14.13 + 3.78 (5 – 24)
5th year students n = 67	27.22 + 5.58 (16 – 42)	25.08 + 5.57 (13 – 38)	18.95 + 4.67 (8 – 30)	28.32 + 6.22 (7 – 41)	15.07 + 3.73 (5 – 22)

students, separately in male and female students as well as by each MBBS class (table-2).

Students' academic self-perception depicts their sense of achievement. Students are found to be 'feeling more on the positive side' as interpreted by their scores. Although the ideal sub scores (25-32) could have depicted the students 'confident' about their academic achievements. The sub scores are satisfactory among male and female students both as well as in each MBBS class (table-2). The highest sub-score among all sub-scores is in 1st year MBBS for academic self perception (21.6/32 – 67.5%).

different classes the scores are found to be positive indicating a 'more positive attitude'.

Students' social self perception is an important finding. This parameter when measured showed average scores. Overall as well as separately male and female students' score indicates interpretation of 'place not too bad socially' as per DREEM interpretation guidelines.

In DREEM sub scores, the highest mean scores (19.3/32 – 60.3% of maximum scores) are achieved by all the students in academic self-perception and lowest in social self-perception

(15.4/28 – 55.1% of maximum scores). Analyzing the individual items, mean score < than 2.0 was found in question no. 3 and 14; indicating students feel the need to have better support in stress management. Moreover they think that they are unable to memorize all they need as indicated by mean score less than 2 in question no. 14 in inventory. The sub scores indicate that there is room for improvement in many domains especially in social environment of the institute as scores are 55-60% of maximum scores.

DISCUSSION

DREEM is a popular diagnostic tool in medical colleges. In a review article, 40 studies from 20 different countries done in 1997 to 2011 were reviewed and DREEM was found to be a useful tool[18]. DREEM tool has been validated (Cronbach's alpha coefficient = 0.9) by a National study as well conducted by University of Health Sciences (UHS), Lahore in 2011[19].

As compared to our total scores of 116.57/200, overall DREEM scores were found to be 117.9/200[20] in medical school of Malaysia, 127.5/200 in Spanish Medical University[21] 103.39/200 in male and 111.33/200 in female students of West Indies Medical University[6], 114/2003 and 107/2004, in India, 118/200 in Nigeria[13], 130/200 in Nepal[13], 108/200 in Sri Lanka[22], 120/200 in United Emirates[9], 89.9/200 in King Saud University Medical School[17] and 139/200 in a UK university; the maximum DREEM total scores reported so far[7]. Roff (2005) indicated that traditional schools commonly score less than 120/200 and innovative institutions have better scores[10].

Our findings are similar to a study on a Spanish Medical College[21] though their sample size was smaller (n = 297). Their overall DREEM score, best sub score in academic self-perception and least sub score in social self-perception are comparable to our study. Their final year students' scores were the least as compared to 3rd and 4th year students whereas in our study final year scores were better than those of 3rd and 4th year. Same were the findings in another study in

a West Indies University Medical School[6]. In an Indian medical school[3], DREEM scores were significantly lower in females as compared to males though that was not the case in our study. In one study final year students of 4 public and 2 private medical colleges of UHS Lahore were included and their combined overall DREEM score was 125/200. In this study, female students found education climate less satisfactory than male students whereas there was no difference in our study[23]. UHS study included 6 medical colleges whereas our study comprised students from only one medical institute. More studies are needed to confirm the findings.

DREEM sub scores in our study are towards positive side but can be improved; especially the social self-perception. Undergraduate degree program in medicine is considered one of the most stressful undergraduate programs. Accurate and detailed evaluation of DREEM scores can enable the concerned authorities to identify the weaknesses and strengths of one's education system and identify the areas where intervention is needed. The ultimate goal is provision of a student-centered, conducive, productive and enjoyable education climate in the institution.

CONCLUSION

Based on DREEM overall total and sub scores, Army Medical College as an institution has a positive educational environment where most of the students feel positive about educational climate, learning environment, teachers, their own academic achievements, institutional atmosphere and their social well-being and there is no gender difference in these perceptions. Although the scores are not ideal but this study scientifically proves that the institute is moving towards a positive direction as scores indicate.

Recommendations

Applying DREEM as a diagnostic tool in an undergraduate medical institute provides an insight of education climate and students perceptions scientifically. This tool can also be used to compare traditional and innovative style

of teaching, low and high achievers' perceptions, students' and teachers' perception, existent and ideal students' perception, different institutions and different department of the same institution and individual departments for their educational environment.

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