ORIGINAL ARTICLE

Students' perception of educational environment at Public Sector Medical University of Pakistan

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Background: Assessing educational environment is vital in determining the success or failure of any institute. A positive environment leads to achievements of students in learning while a negative one would hinder their accomplishments. The aim of this study was to evaluate the medical students' perceptions of their educational environment and to identify any differences related to gender and colleges affiliated with the University. **Materials and Methods:** This cross-sectional study involved all medical colleges affiliated with Dow University of Health Sciences from September to November 2011. DREEM questionnaire was administered to undergraduate medical students of the colleges. Mean and standard deviation of total DREEM score and five subscales were reported. The internal consistency coefficient (Cronbach's alpha) was calculated. Student's *t* test and one-way ANOVA were used for statistical analysis. **Results:** Total respondents were 586 students (response rate = 90.1%), 463 (79.0%) were female. Total DREEM mean score was 114.4/200 (57.2%). Highest score was found in the domain of student's academic self-perceptions (58.7%) and lowest in domain of student's perception of learning (53.7%). The inventory was found to have good reliability, with an alpha-coefficient of 0.89. There was significant difference of total DREEM score, student's perception of learning, teachers, and atmosphere between different colleges. Females perceived their educational environment to be more positive compared to male students. **Conclusion:** The undergraduate educational environment of the university is more positive than negative. Highest score was found in domain of student's academic self-perceptions and lowest in domain of student's perception of learning.

Key words: Dundee ready education environment measure, educational environment, perception, undergraduate

INTRODUCTION

The educational environment is everything that happens within the classroom, departments, faculty, and institution both physically and psychologically. Educational environment is vital in determining the success or failure of any institute.[1] From the day students enter into the medical institute, they face a change in environment. A positive environment leads to achievements, fun, and engagement in learning while a negative one would hinder their accomplishments. Students' perceptions of the educational environment influenced by the different cultural background of student, educational facilities available to them, quality of the faculty, curriculum, and student's expectations apart from other circumstances of the university.[2] This highlights the importance of assessing students' perceptions of their educational environment with a view to improve education and student learning. Effective management of teaching and learning is supported by understanding the educational environment and incorporating appropriate changes and remedies wherever required. There is documented association between educational environment and the students' performance and their satisfaction.[2] The World Federation for Medical Education (WFME) considers the educational environment as one of the areas that should be addressed while evaluating medical education programs of any institute.[3]

Several instruments are available for assessing the environment of undergraduate medical institutions.[4-7] Many of these instruments are now outdated as they do not take into account the recent curriculum changes and educational strategies.[8] The Dundee Ready Education Environment Measure (DREEM) has been developed in Dundee to measure the undergraduate educational climate of the Health Professional Schools.[9] It is highly reliable and validated tool and can be used for conducting comparison of students' perceptions of educational climate within an institution, between institutions or at different point of time within an institution.[10] Moreover, it can be used to help alter the curriculum, comparing past and present curricula and evaluating the effectiveness of a university program.[11]

Dow University of Health Sciences (DUHS), being one of the largest universities of public sector in Pakistan, is working on innovation in the field of medical education ever since its inception in 2003. The university comprises

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Received: 14-12-2012; **Revised:** 15-01-2013; **Accepted:** 09-03-2013

ofthree undergraduate medical colleges located at three different campuses. Two of its colleges, Dow Medical College (DMC) and Sindh Medical College (SMC) have open merit system with higher merit in DMC while Dow International Medical College (DIMC) is primarily for overseas students with majority of the learners belong to Pakistani living abroad. The University is in the process of developing a modular curriculum with vertical and horizontal integration of basic and clinical sciences in two spirals. Because of change in curriculum and different colleges with some difference in students' demography, it is worthwhile to study their perception of educational environment.

The aim of this study is to evaluate the medical students' perceptions of their educational environment and to identify any differences related to gender and colleges. A secondary objective was to evaluate the internal consistency of DREEM questionnaire among Pakistani medical students. This study also helps to identify problem areas that should be remediated. Furthermore, it allows institution to compare its performances and outputs with their peers, which can be pedagogically insightful.

MATERIALS AND METHODS

This comparative cross-sectional study was conducted in all three medical colleges affiliated with DUHS (DMC, DIMC, SMC) from September to November 2011 after approval from Ethical Review board of DUHS.

DREEM contains 50 statements about topics relevant to the educational climate.[9] Each item is scored 0-4 with 4 = strongly agree, 3 = agree, 2 = uncertain, 1 = disagree, and 0 = strongly disagree. Nine out of the 50 statements contain negative statements and are therefore reverse-coded. The DREEM inventory has a maximum score of 200, representing the ideal educational environment. It consists of the following five subdomains: Students' perceptions of learning, students' perceptions of teachers, students' academic self-perceptions, students' perceptions of atmosphere, and students' social self-perceptions.

DREEM questionnaire was administered to undergraduate students of all affiliated medical colleges (approximate total medical undergraduate students are 3,500). Using convenient sampling, all students present on the day of the survey were given the questionnaire after their scheduled lecture. Before administration of the questionnaire, a 5-min briefing was given regarding the purpose and different aspects of the study and DREEM inventory explained to the students. It was emphasized that the identity of the participants were remain anonymous and the data was not be able to be tracked back to the students. It was also explained that the data was only used for research purpose and quality assurance, and students requested to cooperate. Students were given 20 minutes free time to respond to the inventory. Questionnaires were collected at the same time by the research team.

Data was analyzed by using SPSS version-17 (SPSS Inc., Chicago, IL, USA). Descriptive statistics was used to calculate means and standard deviations of DREEM variables, total DREEM, and the five subscales. The internal consistency coefficient (Cronbach's alpha) was calculated to test the inventory's reliability. Unpaired 't' test was used to identify gender related differences between total DREEM score and five subscales and ANOVA was used to identify any variation related to institute. The level of statistical significance was taken at $P < 0.05$.

RESULTS

Total respondents were 586 with response rate of 90.1%. Respondents distribution in colleges was DMC: 292 (47.5%); SMC: 220 (35.8%); DIMC: 78 (12.7%). In total, 463 (79.0%) were female and 123 (21.0%) were male students.

Total DREEM mean score was 114.4/200 (57.2%) in all three medical colleges affiliated with DUHS. Table 1 shows the maximum score of total DREEM inventory and its five subscales, mean, standard deviation, and percentage of all domains with its interpretation. The highest score was found in domain of student's academic self-perceptions (58.7%) and the lowest in domain of student's perception of learning (53.7%).

Table 2 shows the mean scores of DREEM inventory in three medical colleges. There was significant difference of total

Table 1: DREEM scores and subscales

DREEM and its subscale	Maximum score of the scale	Mean (SD)	Percentage of maximum score	Interpretation*
All items	200	114.4 (20.0)	57.2	More positive than negative
Students' perceptions of learning	48	25.8 (5.7)	53.7	More positive perception
Students' perceptions of teachers	44	25.4 (5.6)	57.7	Moving in right direction
Students' academic self-perceptions	32	18.8 (4.6)	58.7	Feeling more on positive side
Students' perceptions of atmosphere	48	28.0 (6.2)	58.3	More positive attitude
Students' social self-perceptions	28	16.3 (4.0)	58.2	Not too bad

*McAleer S, Roff S. A practical guide to using the dundee ready education environment measure (DREEM). Available from URL: www.gppro.co.uk/swacpo/document/dreems2.doc cited: 2012 January 12; SD=Standard deviation

Table 2: Comparison of educational environment of three medical colleges affiliated with dow university of health sciences (*n*=589)

DREEM and its subscale	DMC mean (SD)	DIMC mean (SD)	SMC mean (SD)	*F* value	*P* value
All items	111.1 (20.10)	111.7 (22.76)	119.9 (17.60)*	13.35	<0.001
Students' perceptions of learning	24.8 (5.78)	25.2 (6.31)	27.4 (5.19)*	14.46	<0.001
Students' perceptions of teachers	24.8 (5.89)	24.0 (5.89)	26.8 (5.06)*	11.05	<0.001
Students' academic self-perceptions	18.1 (4.00)*	19.1 (7.71)	19.7 (3.77)	8.08	<0.001
Students' perceptions of atmosphere	27.4 (6.70)	27.2 (5.55)	29.3 (5.69)*	6.53	0.002
Students' social self-perceptions	16.0 (3.38)	16.4 (7.32)	16.6 (3.03)	1.45	2.35

DREEM=Dundee ready education environment measure; SD=Standard deviation; DMC=Dow medical college; DIMC=Dow international medical college; SMC=Sindh medical college, *Significant difference after application of ANOVA

DREEM score, students' perception of learning, teachers and atmosphere between SMC and the other two medical colleges, being more positive. However, students' academic self-perception was more negative among DMC students with statistically significant difference ($P < 0.001$).

Table 3 shows the gender difference in perception of educational environment. Females were more positive than males with statistical significant difference in total DREEM score, students' perceptions of learning, teachers and atmosphere.

Internal consistency findings are shown in Table 4. The total DREEM inventory was found to have good reliability, with an alpha coefficient of 0.89. Internal consistencies of the five subscales were found to reflect variable reliability, with coefficient for perceptions of the social environment was lowest than that of the other subscales [Table 4].

Table 3: Gender difference between perception of educational environment of DUHS

DREEM and its subscale	Males mean (SD)	Females mean (SD)	*P* value
All items	109.4 (22.87)	115.9 (19.04)	0.002
Students' perceptions of learning	24.7 (6.37)	26.2 (5.58)	0.011
Students' perceptions of teachers	23.7 (5.75)	25.9 (5.59)	<0.0001
Students' academic self-perceptions	18.4 (4.42)	18.9 (4.71)	0.271
Students' perceptions of atmosphere	26.8 (7.45)	28.4 (5.87)	0.009
Students' social self-perceptions	15.9 (3.60)	16.4 (4.12)	0.207

Unpaired student '*t*' test used to find out significant difference. DREEM=Dundee ready education environment measure; SD=Standard deviation; DUHS=Dow university of health sciences

Table 4: Reliability of DREEM inventory

DREEM and its subscale	*n* (items)	α
All items	50	0.89
Students' perceptions of learning	12	0.72
Students' perceptions of teachers	11	0.73
Students' academic self-perceptions	8	0.67
Students' perceptions of atmosphere	12	0.64
Students' social self-perceptions	7	0.38

DREEM=Dundee ready education environment measure; α=Cronbach's alpha

DISCUSSION

This is one of the few studies from our country about educational environment at undergraduate teaching institute using validated DREEM inventory. The overall score was not excellent with a mean score of 114.4/200 (57.2%); although it was more positive than negative. Subscale analysis showed highest satisfaction with student's academic self-perceptions with 58.7% and lowest in domain of student's perception of learning with 53.7%. We have a good sample size and overall our sample is representative of the population of DUHS.

There is no established agreement about the acceptable DREEM inventory score from published literature.[12] However, our findings are not very much different from other studies nationally and internationally. A study from private and government medical colleges from Pakistan had a mean score of 125/200, a higher score as compared to this study.[12] Studies from Bangladesh[13] and Srilanka[14] reported a mean DREEM score of 110 and 107.4, respectively. A study from Trinidad[15] reported an overall mean score of 109.9 and another from Nigeria[16] showed score of 118. A study from India while comparing first year and clinical batches reported DREEM score of 119 and 114, respectively.[17] There are some studies which reported a more positive educational environment mostly after change in curriculum and making some reform. For instance, a study from Chile[3] reported a score of 127.5 ± 20.9 (63.8%) after initiation of reform of educational aspects of curriculum. These reforms were emphasized by the WFME and the competencies for the tomorrow's physicians.[18] Another study from UK reported mean DREEM score of 139 (70%)[19] after the curriculum was reformed with the recommendations of GMC.[20] This highlights the importance of contemporary student centered curriculum modification and its positive effects on students perception of educational environment.

On comparison of the three colleges of DUHS, SMC students perceived their environment more positively than students of the other two colleges. This indicates

that SMC students are comparatively more satisfied with what they were experiencing, while students of DMC are more competitive (higher merit among all three colleges) and hence more stressed. Entry in medical colleges through merit produces stress among medical students, right from the beginning. The higher the merit, the more stress. Whenever there is stress, people tend to perceive their environment more negatively than when they are relaxed.[14] So one reason why DMC students perceive their environment more negatively may be the higher rate of competition faced by them from the very start. However, students of DIMC are mostly from different places of the world and are living away from parents and homes, hence they are more stressed and perceive their environment more negatively compared to SMC.

In the five domains studied, the lowest score was in student's perception of learning, which is a point of concern for the faculty and administration. Students are important stake holders and their perception and concerns should be addressed appropriately. The author believes that educational environment is a new avenue for the university and nobody till now thought about its measurement or its improvement. Our study will help to gain insight and helps the concerned authorities to work in the right direction making institute a much more productive place for the students.

Comparing gender difference, females were more positive about their environment. This positivity in females is seen in all studies (Chile,[3] Bangladesh,[13] Sri lanka[14]) except India.[17] This gender-based difference as discussed by Lokuhetty *et al*.,[14] may be due to better interpersonal skills among females compared to males.

Students' perception of the educational environment have a significant influence on their behavior, motivation, and academic achievement.[2] Although DREEM is currently most widely used measure of educational environment, such questionnaires cannot show the entire canvas. They may be valuable in indicating the areas of concern by most of the students; they fail to provide any understanding about the concerned reasons. There is need to have some qualitative data with quantitative inventory as it significantly improves the quantitative inventory understanding, and points out remedies to common areas of student dissatisfaction.[20]

The DREEM inventory is certainly a useful tool for appraising the educational environment of undergraduate medical institute. However, there has been an insufficient emphasis on its psychometric properties. Recently, Hammond SM *et al*.,[21] highlighted two concerns about it. First, the internal consistency of the five sub-scales was quite variable and somewhat low.[3,21] The same finding was observed in our study where social perception alpha coefficient is 0.38. Second, the construct validity of five subscales is not good either. These observations should be kept in mind while interpreting the findings of the studies done with this inventory.

Dow University is progressing in very fast pace in terms of quality enhancement and curriculum change in line with current trends in medical education.[22] We believe this will reflect in a positive way about student perception of educational environment as well. We intend to carry out this study again after one year by supplementing with both quantitative and qualitative methods, like Whittle *et al*.[20]

CONCLUSIONS

Mean DREEM score was 114.4/200 (57.2%) in all three medical colleges affiliated with DUHS. The highest score was found in domain of student's academic self-perceptions and the lowest in domain of student's perception of learning. The results obtained in this study can be used to direct strategic development and the institutional focus of available resources.

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How to cite this article: Jawaid M, Raheel S, Ahmed F, Aijaz H. Students' perception of educational environment at Public Sector Medical University of Pakistan. J Res Med Sci 2013;18:417-21.

Source of Support: Nil, **Conflict of Interest:** None declared.