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STUDENT'S PERCEPTION OF EDUCATIONAL ENVIRONMENT AND THEIR ACADEMIC PERFORMANCE; ARE THEY RELATED?

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ABSTRACT

Objective: To correlate student's perception of learning environment with scores obtained by participants in their final year MBBS exam.

Study Design: Cross-sectional analytical study.

Place and Duration of Study: Study was carried out at Bahria University Medical and Dental College (BUMDC), Karachi. Students of batch 2013 final year MBBS participated in the study.

Methodology: Students of final year MBBS batch 2013 were inducted in the study after obtaining informed consent. The participants filled the Dundee Ready Education Environment Measure (DREEM) inventory at the end of final year, before their exam break. Subsequently, scores obtained in final year MBBS exams were correlated with the DREEM scores.

Results: A strong positive correlation of 0.76 was found between DREEM scores and scores obtained by participants in their final year MBBS exam.

Conclusion: Students' perceptions of their educational environment were positive which lead to better academic performance, as depicted by scores obtained in their final year MBBS examination.

Keywords: Dundee ready education environment measure, Environment, Education, Perception, Undergraduate.

INTRODUCTION

Learning environment is also referred to as "Learning climate" or "Learning atmosphere"[1-4]. It is defined as all that occurs in the class room and/or institution[5,6]. It results from physical, intellectual and socialinteraction between students, teachers, curriculum and surroundings[1,7,8]. Learning environment, both academicand clinical, is an important contributing factorin the acquisition of attitudes, knowledge, and skills by students of medical profession[2,6]. Therefore World Federation for Medical Education has declared that learning environment should also be taken into consideration when evaluating medical education programs[3,5].

Evaluation of learning environment helps in identifying strengths and weaknesses of educational program by obtaining learner's perspective, establishing the impact of change in curriculum, comparing educational programs of different institutes, establishing differences between observed and ideal learning environments, determining the effect of learning environment on learner's achievements and self-efficacy[9,10].

The educational environment influences a student's study habits and academic performance[4,11].

There is sparse information regarding the impact of learning environment on future achievements of students of medical institutes in our country[8,12]. This is resulting in ignorance of student's point of view at the time of curriculum development and also in formally assessing efficacy of curricular changes, thus making the learning process teacher-centered despite adopting learner-centered approaches[12].

The evaluation of learning environment can be done qualitatively or quantitatively[10,13]. For the former purpose, structured interviews are used and for the quantitative evaluation, inventories such as Dundee Ready Educational Environment Measure (DREEM), Postgraduate Hospital Edu-

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cational Environment Measure (PHEEM), are utilized. DREEM; The Dundee Ready Education Environment Measure was developed in 1997 through Delphi technique involving a panel of 30 faculty members from around the world[5,10]. It has been used to measure the educational environment of medical and other health related professional schools, and has been employedon students in several countries, with and without translation[10,14,15].

There are many instruments available for evaluating an undergraduate educational environment, each having its own strengths and weaknesses with regards to design, validity and reliability. However, the most widely used instrument isDREEM[1].

It has been accepted globally for measuring the learning environment and identification of specific problem areas within an institution for different components of educational environment. It has been developed and validated for use regardless of culture and country and is indisputably claimed as a ''cultural-free tool''[6,9,14,15].

The objective of this study was to assess students' perceptions of the educational environment at Bahria University Medical and Dental College (BUMDC), Karachi and to determine how this relates totheir academic performance.

METHODOLOGY

This was a cross-sectional analytical study. The study population comprised of final year MBBS students of Bahria University Medical and Dental College, Karachi, batch 2013.

DREEM of comprises of 50 items, each with a five-point Likert response[10,14,16]. These 50 items are grouped into one of the following five subscales: Students' perception of learning, Students' perception of teachers, Students' academic self-perception, Students' perception ofatmosphere and Students' social self-perceptions. Nine items are negatively phrased (4, 8, 9, 17, 25, 35, 39, 48, 50) and are scored in reverse[10,17,18]. Results of DREEM can be interpreted at three levels: examining each item individually, considering the collective scores of five subscales or by reviewing the overall DREEM score[1,10,16]. In order to obtain the overall DREEM score, the subscale scores are summed up. Maximum score is 200 which indicates an ideal educational environment as perceived by the students[10,15,17]. Methods of analyzing and reporting the data appear inconsistent[10,17,18].Clarity and uniformity of approach in this regard would induce good practice. The overall score is interpreted according to the guide developed by McAleer and Roff,in which a score of 0–50 is considered as very Poor, 51-100 means having plenty of problems,101-150 is interpreted as being more positive than negative, and a score of 151-200 is inferred as excellent[5,12].It has been established as a reliable and valid instrument for more than a decade[1,10,14,17,19,20].

Data collection were commenced after obtaining approval from ethical review committee of the institution. Participants were selected by nonprobability conveniencesampling technique. Sample size was calculated on line by Raosoft sample size calculator keeping margin of error at 5% and confidence level at 95%. The minimum recommended sample size was 58.

A lecture session of one hour was organized in the last week of the academic calendar. Students were explained about the purpose of the study and those consenting to take part were then further elaborated on confidentiality and completion of the inventories.

Filled DREEM inventories were collected and sealed. Following the conclusion of final year MBBS exams and announcement of results, the inventories were retrieved, and data was analyzed.

Statistical analysis was done with the help of Statistical Package for Social Sciences(SPSS)20.

Descriptive statistics such as mean and standard deviation were calculated. Pearson's Correlation Coefficient was calculated between the mean score of DREEM inventory and with the mean examination scoreto investigate the strength of relationship. In order to determine the exact contribution of a component of educational

environment to the overallcorrelation, Pearson's Correlation Coefficient was also calculated between the mean examination scoreand mean scores of five subscales of DREEM inventory i.e. student's perception of learning, teachers, academic self-perception, atmosphere and social self-perception.

RESULT

Out of 87 students, 67 participated in the study giving a response rate of 77%. Amongst these 28 (41.8%) were maleand 39 (58.2%) were females. The mean age of thestudents was 22.5 years.

Mean DREEM inventory score was 140.25 ± 15.70. and a mean score of 67.12 ± 6.006 was obtained in final year MBBS examination (table I).

Table-I: Mean of dream and final year exam scores (n=67).

	Mean ± SD
Dundee Ready Educational Environment Measure Score	140.25 ± 15.701
Final year exam score	67.12 ± 6.006

Correlation was computed to assess the relationship between the DREEM scores and exam scoresof final year MBBS. There was apositive correlation between the two variables, r=0.763, n=67, p<0.001. Overall, there was a strong, positive correlation between DREEM Scores and exam scores. Increases in DREEM Scores were correlating with increases in exam scores.

Correlation calculated betweenthe mean examination scoreand mean scores of five subscales of DREEM inventory i.e. student's perception of learning, teachers, academic self-perception, atmosphere and social self-perception(table-II) was also found to be statistically significant.

Table-II: Correlation between Mean Exam Scores with Dundee Ready Educational Environment Measure Subscales.

	Total No. of Items	Maximum score	Mean ± SD	Pearson correlation coefficient (r)	p-value
Student's perception of learning	12	48	34.46 ± 5.569	0.644	<0.001
Student's perception of teachers	11	44	32.81 ± 3.862	0.574	<0.001
Academic self-perception	8	32	23.18 ± 3.114	0.664	<0.001
Student's perception of atmosphere	12	48	32.85 ± 4.193	0.576	<0.001
Social self-perception	7	28	16.96 ± 3.235	0.525	<0.001

DISCUSSION

The overall mean DREEM score obtained in this study was 140.25 out of 200 which is interpreted as more positive than negative. Review of international studies indicates a range of scores between 99-145[6,7,18,21]. Results similar to our study have been reported by Pande (2016) in a study conducted at a dental college in Nagpur India, where DREEM score of 140/200 was achieved[22]. Likewise the overall score of 150.0 out of 200 was reported at Karolinska Institute in Stockholm, Sweden by Palmgren (2014)[1]. Similarly study conducted by Edgren *et al* (2010) at Lund University revealed a total mean DREEM score of 144/200 in 2003 which increased to 146/200 in 2005[15]. Likewise Dilani Perera (2016) assessed the educational environment of Physiotherapy degree program of University of Colombo and reported total DREEM score of 141.02[23]. Palmgren and Chandratilake (2011) measured the perceptions of undergraduates at Scandinavian College of Chiropractic and obtained an overall DREEM score of 156.1/200[24].

Total DREEM scores less than that stated in our study were reported by; Youssef *et al* (2013) in study conducted at Suez Canal University, Egypt where score of 113 was attained[4]. Score of 104.05 was reported by Tontus (2010) in undergraduate medical school students from the 11 different medical faculties all over Turkey[21]. College of Medicine, King Saud bin Abdul Aziz University for Health Sciences reported a score of 131 out of 200. Brett Vaughan *et al* (2014) studied

osteopathy program of Victoria University (VU), Melbourne, Australia and stated score of 135.37[25]. A study in Malaysia by Rehman *et al* (2015) stated findings within the range of 127.9 points[14]. Scores of 130 and above have been observed in Saudi, Nepal, and two UK universities[5]. Studies conducted at national level by Masood (2013), Anwar (2015), Sarwar (2016) and Riaz (2018)have reported DREEM scores of 114.4, 116.13, 90.4 & 113 and 123 respectively[18,26,27,28].

Comparable to our study, positive perception in all 5 sub scales was seen in studies conducted by Tontus, Pande, Palmgren and Chandratilake[21,22,24].

The wide range of DREEM scores reported in studies conducted nationally and internationally can be due to multiple reasons[4], Institutions employing teacher centered curricula score less than those having student centered curriculum which empowers students giving them responsibility of their learning[4,28]. Variability in students' admission criteria to medical schools, their cultural and educational background can modify the student responses[26]. Another responsible factor may be the variations in analysis of data collected through DREEM inventory and its interpretation[7,10,18,21,27,28].

Psychologists are sharing evidence regarding the influence of physical properties of environment, the human environment and organizational environment on learning. Students perception of their educational environment influences their study habits, motivation and assessment results[7,11,12].

The effect of positive perception of educational environment appearsas higher self-esteem, improved motivation, satisfaction, academic success and decreased stress, anxiety and depression[7,20].

The results of this study affirm that positive perception of students with regards to their educational environment resulted in appropriate /satisfactory performance in their final year MBBS exams (Mean score 67.12). Al-Ansari *et al* (2014) also confirmed in their study that "as the number of students perceiving excellence in learning increased, the number of students with A grades increased"[29]. Similarly Nouh *et al* (2016) observed in their study that as the perception of learning environment improved from "Poor" to "Excellent", the mean GPA increased gradually[20].

To further establish the relationship between perception of learning environment and examination scores we calculated the correlation between them which emerged as r=0.76. Low, yet positive correlation between perception about learning environment and academic performance of medical students in the form of GPA has been reported by Nouh *et al*[20]. Wayne *et al*, cited a positive correlation between results obtained in United States Medical Licensing Examination (USMLE) step I and perception of learning environment which was measured by Learning Environment Questionnaire (LEQ)[8]. Sarwar (2016) reports that "more positive than negative" environmental perception of the institution was associated with better performance in examinations[26].

As a result, there has been increasing concern amongst educators regarding quality of environment for learning. Thereby monitoring of educational environment and perception of students related to it, becomes imperative due to its influence on the academic outcomes[7,11,12].

DREEM has been recommended as the most suitable tool for measuring the educational environment in undergraduate medical institutions[7,10]. Such recommendations reinforce the need for consistency in data analysis and reporting, to ensure that DREEM inventory is used uniformly across institutions[10].

The study revealed the perspective of only one group of students about the learning environment; therefore, the results are not generalizable to all the students in the institute. Moreover, as the study has a pure quantitative design with closed ended questions, further elaboration of information is not possible, qualitative data would have improved the understanding of the inventory[24], small number of participants was another limitation of the study.

CONCLUSION

Students of MBBS program of Bahria University Medical and Dental College, Karachi, who participated in the study had positive perceptions toward their educational environment which lead to better academic performance, as depicted by scores obtained in their final year MBBS examination. If educational institute wants to improve the academic achievements of its students, then it needs to pay close attention to its educational environment which can be done by continuous monitoring and evaluation.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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