MEASURING THE MEDICAL EDUCATION ENVIRONMENT IN UNDERGRADUATE MEDICAL COLLEGES ACROSS PUNJAB, PAKISTAN

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ABSTRACT

Introduction: The University of Health Sciences (UHS) is responsible for regulating medical education in all affiliated Private and Public medical colleges in Punjab Province. Measuring the education environment in these institutions will be the initial step in understanding the factors affecting it.

Materials and Methods: In this cross sectional study, the Population was limited to all the students of the Final Year Baccalaureate of Medicine; Baccalaureate of Surgery in Medical Colleges affiliated with UHS in 2008. DREEM questionnaire was collected anonymously from the students. The given data was analysed using parametric tests in Statistical Package for Social Sciences v.16. Significance was taken at p < 0.05.

Results: The response rate was 84.14%. The overall average age was 23.5 years with comparable male, female age (23.9 and 23.2 respectively). The Mean Score of DREEM in the private sector – (M = 137, SD = 21.25) is statistically significantly higher (t = 9.93, df = 410.38, 2 – tailed p ≤ 0.00) than in the public sector (M = 115, SD = 23.76). Analysis of variance found a statistically significant difference between the various schools (F = 44.23, p ≤ 0.00). A two-way between – groups analysis of variance showed a statistically significant main effect for age group (F = 11.17, p ≤ 0.00). The main effect for gender (F = 0.757, p = 0.385) and the interaction effect (F = 0.78, p = 0.925) were not statistically significant. The Tukey hsd test found that students in age Group '23 years and below' scored statistically significantly lower (121) and students in age Group '26 years and above' scored statistically significantly higher (137) on DREEM than the rest of the students.

Conclusion: Factors influencing struggling environments need to be identified. Females found environment comparatively less satisfactory is a worrying trend and needs to be addressed.

Key Words: DREEM, Medical Education Environment, gender – specific, age – specific, private – public divide.

INTRODUCTION

The medical educational environment is becoming increasingly the focus of research around the world and the literature detailing findings of this research is rapidly growing.[1,2] The students in a medical institution apart from the formal and informal curriculum become aware of the environment of the education. Whereas the curriculum may remain the same, the environment may change from region to region, from one institution to the other and from academic year to another academic year. This climate of education can be stressed or relaxed, student-centered or teacher – centered, strict or lenient etc. and moulds the students into its own.[3]

Measurement of the education environment in the Primary and Secondary education has been carried out for decades.[4-7] Several instruments for measuring the medical education environment were developed between 1960 to 1980.[8-13] More recently Roff 1997,[14] described the development and validation of the Dundee Ready Education Environment Measure (DREEM). It is a generic, multi-dimensional, multi – cultural instrument validated and used in developed and developing countries with considerable success in profiling the perceived weaknesses and strengths of medical and allied institutions in these countries[2].It gives a global score of 200 (max.) and is capable of measuring five separate elements of the Education Environment, 'Perceptions of Learning' (PoL), Perceptions of teachers' (PoT), 'Perceptions of Atmosphere' (PoA), 'Academic Self – Perception' (ASP) and 'Social Self – Perceptions' (SSP).

In the entire Province of Punjab, University of Health Sciences is responsible for regulating Medical Education. At the time of this study, Twenty – Two private and public medical colleges were affiliated with the University. The main goal of the study was to measure the educational environment in these institutions. This should allow the University

to take steps in enhancing the environment in order to improve the quality of its product i.e the medical graduates.

MATERIALS AND METHODS

Approval for the study was obtained from the Ethical Committee, UHS. It was a cross – sectional study and the population of the study was limited to all the students of Final Year Baccalaureate of medicine; Baccalaureate of Surgery (M.B.B.S) in medical colleges affiliated to UHS in 2008. There were 1612 Final Year M.B.B.S. students in six public and two private medical colleges, 1406 (704 males, 702 females) in public and 206 (70 males, 136 females) in private. Stratified random sampling was used to ensure the representation of both private and public sectors. A pilot study was conducted to estimate the volume of sample. During the sampling process three public medical colleges were excluded from the study. DREEM questionnaire was collected anonymously from the students. The given data was analyzed using parametric tests in microsoft excel 2003 and Statistical Package for Social Sciences (SPSS) version 16. The analysis included correlation of DREEM scores in public and private medical colleges by using Students t – test. One – Way Analysis Of Variance (ANOVA) was carried out to analyse the difference between the mean DREEM scores of different colleges and ANOVA was carried out to determine the impact of gender and age on DREEM scores. Significance was taken at $p < 0.05$.

RESULTS

A total of 498 questionnaires were distributed of which 419 responded.

The overall average age was 23.5 years (24.1 in private and 23.0 in public), with comparable male, female age (23.9 and 23.2 respectively). The average DREEM score was 125 (137 in private and 115 in public). There were 87 missing responses in 29 questionnaires. In each of these 29 questionnaires, the
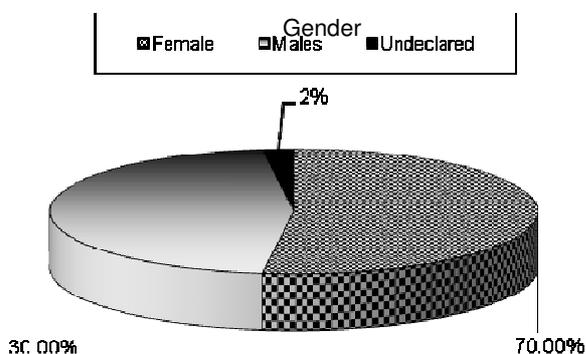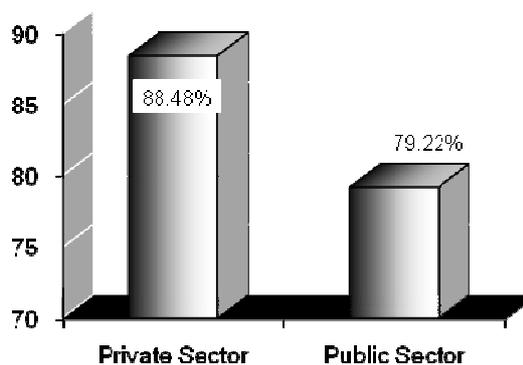

Fig. 2: *Response percentage in private and public sector.*

number of missing responses was less than 10%. These missing responses were tabulated as 'Uncertain'. There were in total 35 multiple responses in eleven questionnaires and in each case the higher response was accepted. In Fig. 3 response of 20863 non missing values are shown.
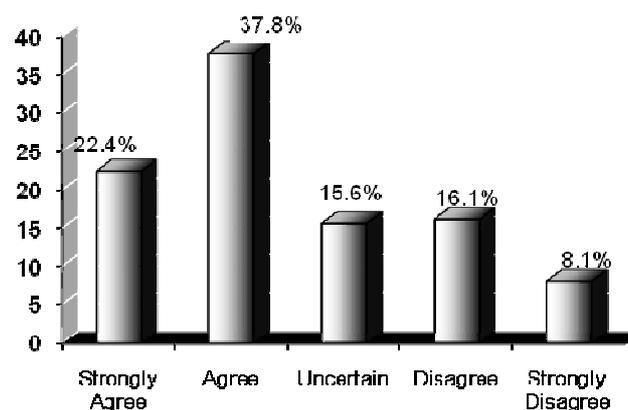

Fig. 3: *Responses of the respondents.*

Table 1: *Results of independent sample t-test on mean DREEM scores of private and public sectors.*

t-Test	Mean DREEM Scores	t-Statistics	P-value
Private Sector	137	9.93	0.000
Public Sector	115		

Results of t-test showed that the DREEM Mean Score of candidates in the private sector is statistically significantly higher than the DREEM mean score of candidates in the public sector. Results are shown in Table 1.

Fig. 1: *Gender of the respondents.*

Analysis of variance (ANOVA) found that there was a statistically significant difference between the various schools (F = 44.23, p = 0.00). The Tukey hsd test found that the means of two public and one private medical colleges (127, 129 and 129 respectively) were not statistically significantly different from each other. However, the mean of one public college (107) situated in Southern Punjab was statistically significantly lower (p = 0.00) from all other medical colleges. Similarly the mean of one mature, private medical college (141) was statistically significantly higher than all other colleges.

A two – way between – groups analysis of variance was conducted to discover the impact of gender and age group on the DREEM score of candidates in institutions of both public and private sectors. Subjects were divided into three groups by age: Group 1: 23 and below; Group 2: 24 – 25 and Group 3: 26 and above. There was a statistically significant main effect for age group (F = 11.17, p = 0.00). However, the effect size was small (partial eta squared = 0.054). The main effect for gender (F = 0.757, p = 0.385) and the interaction effect (F = 0.078, p = 0.925) were not statistically significant. The Tukey hsd test found that students in age Group 1 scored statistically significantly lower (121) and students in age Group 3 scored statistically significantly higher (137) on DREEM than the rest of the students.

A two – way between – groups analysis of variance was conducted to discover the impact of gender and age group on the DREEM score of candidates in private institutions only. Subjects were divided into three groups by age: Group 1: 23 and below; Group 2: 24 – 25 and Group 3: 26 and above. There was a statistically significant main effect for gender (F = 6.57, p = 0.011). However, the effect size was small (partial eta squared = 0.038). The main effect for age group (F = 0.614, p = 0.543) and the interaction effect (F = 1.774, p = 0.173) were not statistically significant. The mean scores of private sector male students (M = 141, SD = 18.55) is higher than those of the private sector female students (M = 135, SD = 22.20), however the difference is not statistically significant (t = 1.84, df = 180, two – tailed p = 0.068).

A two – way between – groups analysis of variance was conducted to discover the impact of gender and age group on the DREEM score of candidates in public institutions only. Subjects were divided into three groups by age: Group 1: 23 and below; Group 2: 24 – 25 and Group 3: 26 and above. There was a statistically significant main effect for gender (F = 5.997, p = 0.015). However, the effect size was small (partial eta squared = 0.027). The main effect for age group (F = 3.342, p = 0.037) and the interaction effect (F = 3.414, p = 0.035) were not statistically significant. The mean scores of public sector male students (M = 116, SD = 25.20) is higher than those of the public sector female students (M = 115, SD = 21.90), however the difference is not statistically significant (t = 0.294, df = 228, two – tailed p = 0.769).

DISCUSSION

DREEM was developed as an instrument for measuring the Medical Education Environment of medical institutions by the Department of Medical Education at the Dundee University Medical College in Dundee, Scotland[14]. Since its inception it has proven to be a valuable instrument, that has been found to be multicultural and generic with consistent reliability.[2] It has been invaluable in studies conducted worldwide in profiling the strengths and weaknesses of institutions against a range of variables, including gender, age, course level, mode of entry, ethnicity, learning styles, grade point averages, teaching methodologies, etc.[2]

DREEM was administered to 127 students in years 4, 5 and 6 in a Nigerian Medical School. The mean DREEM score was 118 / 200 and there were statistically significant gender and academic year differences[3]. At a Nepalese Health Sciences Institute, students had a total DREEM score of 130 / 200 and significant gender and academic year differences.[3] Till (2004), found that the DREEM score declined steadily from year 1 to 3 in 407 Canadian Chiropractic students.[15]

Variations in DREEM scores have been reported in various studies by Al – Hazimi et al.[16] (Scottish Medical School; 139 / 200), Geraedts[17] (Dutch Medical School; 134 / 200) and Bassaw et al[18] (West Indies; 110 / 200), indicating that DREEM is capable of detecting region – specific variations in environment. In our present study, the mean DREEM scores were different at each of the 5 medical colleges (141, 129, 129, 127 and 107). At one of these colleges, the DREEM mean was statistically significantly lower and at another it was statistically significantly higher than the total mean DREEM score of all colleges. This is an important finding since it reflects on the variations in the environment of colleges which are clustered close together (Four within the same city) as well as hundreds of miles afar (the one with the lowest mean DREEM score is situated in Southern Punjab). This finding could also support the theory that the DREEM is capable of differentiating between student-centered and teacher-centered, didactic environments[2]; and is also able to make comparative analyses of students' perceptions of educational environments between institutions.

Al – Sketty in his study at three institutes of nursing at the Sultanate of Oman found variations in the DREEM score based on year – of – study, gender and institution.[19] He recommended the use

of DREEM in standardizing medical education across institutions within a region. Similar within – region institution – specific variations were reported in studies by Al – Qahtani,[20] Al – Hazimi et al.[16] and Zaini[21] in three specific regions in the Middle East. These studies also showed gender – specific statistically significant variations in the DREEM score.

The present study identified age – specific variations in the DREEM score with students aged 23 and below having a statistically significantly lower DREEM score than students in age group 26 and above.

Gender – specific variations in the DREEM score in a study by Al – Hazimi et al[22] in 2004 identified that the female students were more satisfied than their male counterparts in the Dundee University Medical School (overall mean DREEM score 139 / 200). This was in sharp contrast to the Middle East and Gulf region studies where the gender – specific variations favoured the male students. In our present study, there were no statistically significant gender – specific variations overall, but in both private and public medical colleges male students had a higher mean DREEM score. This is a very important finding, since it identifies 'female – unfriendly' environments overall in both the private and public sectors. This study, therefore highlights another use of the DREEM inventory: identification of environments that require intervention to make them more female – student – friendly or vice versa.

Our study has also identified a statistically significant difference in the mean DREEM scores of the private and public sector medical students. The private and public sector have never been compared using the DREEM inventory before. The higher DREEM score of the private sector may signify a more student – friendly, relaxed, less authoritarian environment than in the public sector.[23]

We believe that further studies will be required to explore the private – public divide and to bridge the gap. In order to standardize medical education, we recommend identification of struggling environments and the factors influencing them that can be improved, especially in the medical colleges situated in the periphery. The fact that in both private and public sectors the females found the environment comparatively less satisfactory is a worrying trend and needs to be addressed.

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