RESEARCH ARTICLE

Assessment of the relationship between the educational environment and academic performance of undergraduate medical students of Azad Kashmir

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Abstract

Objective: To assess the relationship between the educational environment and academic performance of undergraduate medical students of Azad Jammu and Kashmir.

Method: The cross-sectional study was conducted from September 2018 to September 2019 at Poonch Medical College, Rawalakot, Azad Jammu and Kashmir, and comprised undergraduate medical students of either gender from first to fifth year of studies. Data was collected using the Dundee Ready Education Environment Measure questionnaire which was distributed electronically to the students. The percentage of scores achieved in the last professional examination was taken as the academic performance, and it was corelated with the questionnaire's subscale scores. Data was analysed using SPSS 23.

Results: Of the 500 students approached, 324(64.8%) returned the questionnaire fully completed; 92(28.4%) males and 232(71.6%) females. The largest group was from the third year of studies 108(33.3%). The mean questionnaire score was 96.31±18.47 and it was not significantly correlated with academic performance (p>0.05). The subdomain mean scores were also not significantly correlated with academic performance (p>0.05). Academic performance was significantly higher among females compared to males (p=0.002).

Conclusion: There was found a huge scope for improvement of the educational environment.

Keywords: DREEM, Learning, Undergraduate, Medical students. (JPMA 72: 243; 2022)

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Introduction

Training settings could be described as anything immediately or inadvertently affecting teaching.[1] We severely need to assess our programme's power during the modern age of accountability and regression testing, and to select feasible areas for academic revision. Knowing about the educational environment will assist us in concentrating on what we need to maintain, build and enhance.[2,3]

A learning atmosphere is something that both the learners and the educators encounter and interpret.[4] These views would be focussed on three key elements: physical setting, mental environment, and cognitive climate.[5] A learning environment study aims at evaluating the attitudes of learners about their surroundings, and can direct the educators to introspect, design and integrate the greatest teaching approach for improving the academic climate.[6] The latest desire to improve efficiency assessment processes in healthcare organisations has resulted in a revived involvement in the views of the academic setting by the learners.[7] For instance, a beneficial teaching atmosphere, cosy teaching spaces, receptive clinical climate, and empowered, qualified and accessible educators, are thought to boost learner satisfaction, which, in turn, contributes to greater teaching commitment and enhanced efficiency.[8]

For dental practitioners and in the context of medical schooling, the current assessment of the academic setting has become a significant problem. While several steps have been recommended concerning the academic setting, the Dundee Ready Education Environment Measure (DREEM) continues to be the main discussion point.[9] Training is the backbone of any instructional setting. Therefore, attempts to make this training more appealing and friendlier without undermining its value needs to be considered.[10] Data obtained from these inquiries can be used to enforce and evaluate curriculum, instructional distribution, and physical landscape modifications. Although not relying on any particular academic theory, the professional medical schemes have released countless assessments of the instructional setting. In exchange for academics to provide their students with the greatest standard of teaching, creating a learning-friendly atmosphere is a precondition. This can be accomplished by defining environmental flaws.[4] The understanding of the instructional setting by students is a helpful foundation for changing and enhancing their performance. The DREEM inventory has been created to index the medical and social schooling climate.[11,12] In

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Europe, Africa, Asia, Australia and the United States, DREEM has been evaluated.[13]

To the best of our knowledge, no research has been conducted in Azad Jammu and Kashmir (AJ&K) to assess the instructional climate. Besides, a number of medical schools both in public and private sectors have started functioning in the region over the last 10 years, and that has required the evaluation of the instructional setting. The current study was planned to assess the relationship between the educational environment and academic performance of undergraduate medical students in AJ&K.

Subject and Methods

The cross-sectional study was conducted from September 2018 to September 2019 at Poonch Medical College, Rawalakot, AJ&K, and comprised undergraduate medical students of either gender from first to fifth year of studies who were assessed the DREEM questionnaire.[14] After approval from the institutional ethics review board, the sample size was calculated using the formula $n = Z^2 P(1-P)/d^2$ [15] with alpha value 0.05, while the prevalence rate was taken as 50% since the prevalence was not known. The study questionnaire along with informed consent form was electronically distributed to all the 500 medical students studying at the time. Incomplete questionnaire were excluded.

The 50-item DREEM questionnaire is scored on a five-point Likert scale, ranging from 0 = strong disagreement to 4 = strong agreement. The overall total ranges from 0 to 200. Of the 50 items, 9 are negatively stated. The questionnaires has five subscales: students' perception about learning (SPL), students' perception of teachers (SPT), students' academic self-perceptions (SAP), students' perception of atmosphere (SPA), and students' social self-perception. For the DREEM subscales, the maximum scores are 48, 44, 32, 48 and 28, respectively, and offer a chance to identify the system's faults and strengths.

The scores were interpreted as recommended.[14]

The returned DREEM questionnaires were checked for completeness and correctness. Data was analysed using SPSS 23 with 95% confidence interval (CI). Frequencies, percentages, mean, standard deviation and median values were used, as appropriate, to express the variables. Respondents' last professional examination scores were taken the academic performance, and, along with DREEM scores, were compared along demographic lines. DREEM score and academic performance were checked for normality by Shapiro Wilk and Kolmogorov Smirnov tests. Both tests revealed non-normal distribution with $p<0.050$. The mean and standard deviation values for each DREEM item and its Spearman correlation with academic performance was assessed. Subscale median values and their Spearman correlation with academic performance were also studied. Non-parametric correlation between the age of all respondents and academic performance and the DREEM score was also studied. The relationship between gender and academic performance and the DREEM score was assessed using the Mann-Whitney U test. The relationship involving academic year, academic performance and DREEM score was observed using Kruskal Wallis H test.

Results

Of the 500 students approached, 324(64.8%) returned the questionnaire fully completed; 92(28.4%) males and 232(71.6%) females. The largest group was from the third year of studies 108(33.3%). The mean DREEM score was 96.31±18.47 (range: 36-145), which was interpreted as 'having many issues'. Only fifth-year medical students' DREEM score was categorised as 'more favourable than adverse' (Table-1).

Students' score in each DREEM category and subscale was noted and interpreted (Table-2). When each item of

Table-1: Baseline characteristics of the respondents, their academic performance, and DREEM score.

Characteristics	N (%)	Academic performance Mean ± SD	DREEM score Mean ± SD	DREEM score Median	DREEM category
Gender					
Male	92 (28.4)	63.78 ± 4.53	96.60 ± 18.62	98	Many issues
Female	232 (71.6)	65.64 ± 4.73	96.20 ± 18.45	100	Many issues
Year of studies					
First	26 (8.0)	61.65 ± 2.10	97.65 ± 19.04	100.5	Many issues
Second	82 (25.3)	64.33 ± 4.25	97.87 ± 17.72	100	Many issues
Third	108 (33.3)	65.09 ± 4.88	92.44 ± 18.18	96.5	Many issues
Fourth	47 (14.5)	67.11 ± 4.58	96.47 ± 20.87	96	Many issues
Fifth	61 (18.8)	66.15 ± 5.11	100.41 ± 17.04	103	More favourable than adverse

DREEM: Dundee Ready Education Environment Measure.

Table-2: Distribution of all cases by DREEM score categories and subgroup score categories.

Scales	Score range	Interpretation	N	%
DREEM	0–50	Very bad	8	2.5
	51–100	Many issues	166	51.2
	101–150	More favourable than adverse	150	46.3
	151–200	Outstanding	Nil	Nil
SPL	0–12	Very bad	9	2.8
	13–24	Adverse	80	24.7
	25–36	A more favourable strategy	220	67.9
	37-48	favourable strategy	15	4.6
SPT	0–11	Abysmal	Nil	Nil
	12–22	In need of some retraining	48	14.8
	23–33	Going in the correct path	260	80.2
	34–44	Template educators	16	4.9
SAP	0–8	A feeling of total failure	2	0.6
	9–16	Many negative aspects	48	14.8
	17–24	Feeling more on the positive side	210	64.8
	25–32	Confident	64	19.8
SPA	0–12	Terrible environment	14	4.3
	13–24	There were many issues that need to change	80	24.7
	25–36	A more positive atmosphere	214	66
	37–48	A good feeling overall	16	4.9
SSP	0–7	Miserable	6	1.9
	8–14	Not a nice place	101	31.2
	15–21	Not too bad	200	61.7
	22–28	Very good socially	17	5.2

DREEM: Dundee Ready Education Environment Measure, Students' perception about learning, SPT: Students' perception of teachers, SAP: Students' academic self-perceptions, SPA: Students' perception of atmosphere, SSP: Students' social self-perception.

Table-3: Mean values of all the DREEM items and their correlation with academic performance.

Subscales	Specific questions	Mean	SD	r	p-value
SPL	I am encouraged to participate in teaching sessions	2.51	1.17	0.092	0.097
	The teaching is often stimulating	2.56	1.03	0.11	0.047
	The teaching is student-centered	2.26	1.1	-0.013	0.81
	The teaching helps to develop my competence	2.26	1.12	0.085	0.127
	The teaching is well focused	2.43	1.09	0.061	0.276
	The teaching helps to develop my confidence	2.32	1.16	0.035	0.527
	The teaching time is put to good use	2.49	0.98	-0.01	0.861
	The teaching over emphasizes factual learning	2.31	0.93	-0.004	0.941
	I am clear about the learning objectives of the course	2.59	0.99	0.019	0.738
	The teaching encourages me to be an active learner	2.4	1.13	-0.054	0.33
	Long term learning is emphasized over short term learning	2.57	1.05	-0.11	0.048
	The teaching is too teacher-centered	2.24	1.06	0.042	0.448
SPT	The course organizers are knowledgeable	2.95	0.89	0.024	0.672
	The course organizers espouse a patient-centered approach to consulting	2.46	1.04	0.071	0.201
	The course organizers ridicule their students	1.92	1.19	0.038	0.498
	The course organizers are authoritarian	2.6	0.91	0.054	0.33
	The course organizers appear to have effective communication skills with patients	2.72	0.92	0.082	0.14
	The teachers are good at providing feedback to students	2.51	1.04	-0.093	0.093
	The teachers provide constructive criticism here	2.17	1.06	-0.05	0.372
	The teachers give clear examples	2.58	0.9	-0.006	0.916
	The teachers get angry in teaching sessions	2.38	1.18	0.037	0.511
	The teachers are well prepared for their teaching sessions	2.6	0.97	-0.114	0.04
	The students irritate the teachers	2.1	1.29	0.138	0.013
SAP	Learning strategies which worked for me before continue to work for me now	2.43	0.89	0.032	0.562
	I am confident about passing this year	3.04	0.91	0.061	.277
	I feel I am being well prepared for my profession	2.74	0.98	-.017	.766
	Last year's work has been good preparation for this year's work	2.55	1.08	.068	.222
	I am able to memorize all I need	2.45	1.04	.084	.130
	I have learned a lot about empathy in my profession	2.64	0.99	-.050	.370
	My problem-solving skills are being well developed here	2.49	1.07	.062	.269
	Much of what I have to learn seems relevant to a career in healthcare	2.77	0.83	-.029	.601
SPA	The atmosphere is relaxed during consultation teaching	2.35	1.06	.093	.094
	The course is well timetabled	1.89	1.28	-.011	.849
	Cheating is a problem in this course	2.03	1.26	.117	.035
	The atmosphere is relaxed during lectures	2.45	1.07	-.063	.258
	There are opportunities for me to develop interpersonal skills	2.29	1.1	-0.06	.484
	I feel comfortable in teaching sessions socially	2.46	1.11	-.080	.153
	The atmosphere is relaxed during tutorials	2.52	1.02	-.060	.280
	I find experience disappointing	2.03	1.11	-.093	.094
	I am able to concentrate well	2.56	1.01	.059	.287
	The enjoyment outweighs the stress of studying medicine	2.43	1.13	.118	.033
	The atmosphere motivates me as a learner	2.23	1.07	.063	.260
	I feel able to ask the questions I want	2.23	0.99	.038	.495
SSP	There is a good support system for students who get stressed	1.66	1.23	-0.004	0.943
	I am too tired to enjoy this course	2.16	1.2	-0.155	.005
	I am rarely bored on this course	2.01	1.23	-.042	.450
	I have good friends in this course	2.85	1.06	.021	.704
	My social life is good	2.7	1.01	.030	.592
	I seldom feel lonely	2.48	1.19	.062	.269
	My accommodation is pleasant	2.45	1.02	.002	.968

Contd. on next column >>>

DREEM: Dundee Ready Education Environment Measure, Students' perception about learning, SPT: Students' perception of teachers, SAP: Students' academic self-perceptions, SPA: Students' perception of atmosphere, SSP: Students' social self-perception.

the DREEM questionnaire was correlated with the academic performance, a weak positive correlation was observed for SPL - item 2, SPT - item 11 and SPA - items 3 and 10 ($p<0.05$). Weak negative correlations were observed for SPL - item 11, SPT - item 10 and SSP item 2 ($p<0.05$) (Table-3).

Table-4: Mean and median DREEM subscale scores and their correlation with academic performance.

DREEM and subgroups	Mean scores	Median scores	Interpretation	Correlation with academic performance	
				r	p-value
SPL	27.85 ± 6.80	30	More favourable	.018	.742
SPT	25.13 ± 5.90	25	Going in the correct path	-.093	.096
SAP	21.10 ± 4.44	22	Feeling more on the positive side	.051	.364
SPA	27.47 ± 6.60	28	A more positive atmosphere	.064	.253
SSP	15.98 ± 3.69	16	Not too bad	.047	.400
DREEM score	96.31 ± 18.47	99.5	Many issues	-.006	.917

DREEM: Dundee Ready Education Environment Measure, SPL: Students' perception about learning, SPT: Students' perception of teachers, SAP: Students' academic self-perceptions, SPA: Students' perception of atmosphere, SSP: Students' social self-perception.

Table-5: Relationship among baseline characteristics DREEM score and academic performance.

Characteristics	Academic performance p-value	DREEM score p-value
Age	.857	.917
Gender	.002	.087
Year of study	<.001	.109

DREEM: Dundee Ready Education Environment Measure.

Overall DREEM score subdomain mean scores were not significantly correlated with academic performance (p>0.05) (Table-4). Correlation of age with academic performance and DREEM score was not statistically significant (p>0.05). Female students had higher academic performance 65.64 ± 4.73 compared to males 63.78 ± 4.53 (p=0.002). The academic score was also significantly different in each academic year (p<0.001). However, the DREEM score was not significantly associated with gender (p=0.087) and academic year (p=0.109) (Table-5).

Discussion

The findings suggested there is plenty of scope for improvement in terms of academic performance and DREEM scores. None of the students fell into the 'outstanding' category of DREEM scoring. A similar study involving Pakistani medical students revealed a mean DREEM score of 127 ±19.3, which was much higher than that noted in the current study.[16] Regarding the DREEM subdomains, the current study did not find a good score compared to a previous study, which revealed higher scores in almost all domains.[17] An Australian study also showed higher scores for clinical year undergraduate medical students.[18] A Pakistani study showed DREEM subdomain scores[19] that were very similar to the current study's findings.

The current study did not find any direct correlation between DREEM score and academic performance. When the DREEM scores were categorised as 'very bad', 'many issues', and 'more favourable than adverse', the mean academic scores were 64.38±1.19, 65.07±4.96 and 65.21±4.63 which were not significantly different (p>.05). In contrast, a previous Pakistani study revealed a strong positive correlation between DREEM scores and academic performance.[20] However, a significant correlation between some specific DREEM items and academic performance was identified by the current study.

The current study raises critical questions. Why did females score better in academic performance? Why did fifth-year students have the highest DREEM score? Further studies are recommended to answer these questions and find out other significant factors responsible for better academic performance.

In terms of limitations, the current study was done at a single-centre and comprised only medical students. Nursing, dental, physiotherapy paramedics and postgraduate students could be included to attempt a clearer picture. Due to a lower response rate, the absolute precision of the study is >5%.

Conclusion

There was no significant relationship between overall DREEM scores and academic performance. However, some DREEM items correlated positively with the academic score which means there is some specific impact of the educational environment over academic performance. Although all respondents were in the same learning environment, females scored higher than males in terms of academic performance. Some other factors may have had a greater impact on academic performance other than the education environments in the study area.

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