

Educational Environment in A Medical College: Exploration of Strengths, Weaknesses and Improvement Strategies

Mahmood UI Hassan, Abid Ashar*

Department of Orthopaedic, Peshawar Medical College Peshawar Pakistan,

*Department Oral & Maxillofacial Surgery, Fatima Memorial Hospital College of Medicine & Dentistry, Shadman, Lahore Pakistan

ABSTRACT

Objectives: To assess the Dundee Ready Education Environment Measure (DREEM) score of the college environment with identification of strengths and weaknesses and suggesting remedial measures.

Study Design: Mixed method sequential explanatory study.

Place and Duration of Study: Peshawar Medical College, Peshawar Pakistan, from Feb to Apr 2019.

Methodology: Dundee Ready Education Environment Measure (DREEM) questionnaire was used to quantitatively assess the educational environment of the college while in the qualitative part of the study, interviews were conducted to find out remedial measures to overcome the weaknesses and to further improve identified strengths.

Results: In the quantitative part of the study, the overall DREEM score of the college was calculated to be 130.576. Taken separately, 1st year, 3rd year and final years had scores of 128.38, 131.97 and 131.40 respectively, which were rated as more positive than negative. This study identified that students feel overburdened with studies and feel stressed. In the qualitative part of the study, thematic analysis of interviews identified that stress and time management workshops at regular intervals, establishing student support groups, strengthening mentorship programs, frequent formative assessment and involvement of students in the curricular forums are possible remedial measures.

Conclusion: One student's perception of college educational environment is positive. Overburdening with studies and stress in medical students were identified as problem areas. Identified improvement measures included establishing support groups for the students, arranging stress management workshops and strengthening mentorship programs.

Keywords: Dundee Ready Education Environment Measure (DREEM), Medical Education, Undergraduate Medical Education.

How to Cite This Article: Hassan MU, Ashar A. Educational Environment in A Medical College: Exploration of Strengths, Weaknesses and Improvement Strategies. *Pak Armed Forces Med J* 2024; 74(6): 1716-1722. DOI: <https://doi.org/10.51253/pafmj.v74i6.6825>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Environment prevailing in an institution and perceived by the students is called educational environment.¹ Methodologies of teaching, social support and psychological boosting, relationship among students, student-teacher- relationship, development of self-regulated and promotion of peer-assisted learning, facilitation of extra-curricular activities, assessment techniques and overall atmosphere of the institute comprise educational environment.² It may change from region to region, from one institute to another and even in the same institute from one academic year to the other.³ The educational environment of a medical college moulds student's attitude, knowledge, skills and behaviours.⁴ An institute can incorporate appropriate changes and remedies wherever needed by understanding the educational environment.⁵ Literature supports association between

educational environment and student's performance.^{5,6} A institution's educational environment plays a significant role in its student's learning.^{1,5}

According to World Federation For Medical Education (WFME) assessment of the medical education environment is essential in evaluating any medical education programme.⁷ Dundee Ready Education Environment Measure (DREEM) was developed by Roff *et al.*⁸ in 1997, to measure learning environment in medical and allied institutes, now being used throughout the world with many translations.⁹ Getu *et al.*¹⁰ in 2005, described DREEM as a powerful instrument to measure student's perceptions regarding educational environment. Literature proves that DREEM is a highly effective tool to assess the educational environment at undergraduate level and has been validated for Pakistani population.^{4,9}

There are plenty of studies showing overall DREEM scoring of institutes or comparing different institute's using DREEM scoring. However, literature is lacking on probing the causes for the strengths and

Correspondence: Dr Mahmood UI Hassan, Department of Orthopaedic, Peshawar Medical College Peshawar Pakistan
Received: 03 Jun 2021; revision received: 12 Sep 2021; accepted: 21 Sep 2021

weaknesses of the educational environment and how to improve them, which is why we conducted this study.

METHODOLOGY

This mixed-method sequential explanatory study was conducted at Peshawar Medical College, Peshawar Pakistan from February to April 2019, after obtaining approval from the Ethical Review Committee of Peshawar Medical College (IRB Approval Number: Prime/IRB/ 2017-18-0081).

Inclusion Criteria: Students of either gender, with no age restriction, in the class showing willingness for participation in the study by staying in the class to fill the Dundee Ready Education Environment Measure (DREEM) questionnaire were included.

Exclusion Criteria: Students who were not present in class on the day data was collected.

In the first part of the study 1st year, 3rd year and final year MBBS students were selected as sample population using non-probability convenience sampling. Written, informed consent was taken. DREEM questionnaire was used to generate quantitative data containing 50 items with following five subscales: Students’ perception of Learning (SPL) 12 items (max score: 48), Students’ perception of teachers (SPT) 11 items (max score: 44), Students’ academic self-perception (SASP) 8 items (max score: 32), Students’ perception of atmosphere (SPA) 12 items (max score: 48), and Students’ social self-perception (SSSP) 7 items (max score: 28).⁸⁻¹⁴

Each item in the DREEM questionnaire was rated from zero to five based on 5-point Likert scale. The total score was 200. Out of 50 items nine items were negative and were scored in reverse manner.⁸⁻¹⁴ This

questionnaire was administered to students of 1st year, 3rd year and final year classes in face-to-face sessions. Students were briefed regarding the significance of this study and how to answer this questionnaire. Student’s participation was voluntary, confidential and was kept anonymous. The students were given 30 minutes time to respond to the questionnaire. Filled questionnaires were collected at the same time.

This quantitatively generated data was entered in “MS Office excel”. The mean and standard deviation for all items, both class-wise and domain-wise, were calculated. The scores were combined to obtain total score and percentage domain-wise for each respective class and whole college.

The second part of the study was qualitative and interviews were conducted of faculty members and student’s representatives by adopting purposive maximum variation sampling strategy.^{11,12} Semi-structured interviews were conducted to further explore weaknesses and strengths of the educational environment identified in the quantitative analysis. Qualitatively generated data, obtained through interviews, was first transcribed into text. The text was divided into segments of information. These segments of information were coded and categorized to identify the themes and then they were interlinked to generate conclusions.

RESULTS

In our study 110 students from 1st year, 96 from 3rd year and 94 from final year filled the DREEM questionnaire, making a total of 300 students. The quantitatively generated data of DREEM score was analyzed at overall score level, subscale score level and item score level (Table-I & II). The overall DREEM

Table-I: Student’s Scores in the Five Domains of the Dundee Ready Education Environment Measure (DREEM) Questionnaire (n=300)

Subclass	Item no.	Item	First year Mean ±SD	Third year Mean ±SD	Final year Mean ±SD	Overall item mean
Students perception of Learning	1	I am encouraged to participate in teaching sessions	3.04±0.89	3.13±0.76	2.88±0.99	3.02
	7	The teaching is often stimulating	3.06±0.99	3.10±0.68	3.04±0.73	3.07
	13	The teaching is registrar centred	3.05±0.77	2.91±0.84	3.07±0.81	3.01
	16	The teaching helps to develop my competence	2.65±1.0	2.98±0.92	2.88±0.93	2.84
	20	The teaching is well focused	3.15±0.89	2.65±0.94	3.06±0.73	2.95
	21	I feel I am being well prepared for my profession	2.87±0.98	2.64±1.01	3.04±0.81	2.85
	24	The teaching time is put to good use	3.19±0.87	2.76±0.75	2.87±0.89	2.94
	25	The teaching over emphasizes factual learning	1.8±0.93	2.50±1.10	1.76±1.09	2.02
	38	I am clear about the learning objectives of the course	3.00±1.02	2.59±1.01	2.86±0.71	2.82
	44	The teaching encourages me to be an active learner	3.07±0.97	3.08±0.79	2.86±0.92	3.00
	47	Long term learning is emphasized over short term learning	2.76±1.03	2.23±1.14	2.34±1.16	2.44
	48	The teaching is too teacher centred	2.06±1.28	2.17±1.26	1.91±1.15	2.05

Exploration of Strengths

Students' perception of teachers	2	The course organisers are knowledgeable	3.19±0.82	3.15±0.70	3.25±0.56	3.20
	6	The course organisers espouse a patient centred approach to consulting	2.18±1.03	2.48±0.71	2.80±0.82	2.49
	8	The course organisers ridicule their registrars	2.31±1.05	2.60±0.95	1.85±1.10	2.25
	9	The course organisers are authoritarian	1.68±1.11	2.11±1.32	2.31±1.38	2.03
	18	The course organisers appear to have effective communication skills with patients	2.36± 1.03	3.22±0.73	3.07±0.80	2.88
	29	The course organisers are good at providing feedback to registrars	2.4±1.03	2.22±1.13	2.52±1.23	2.38
	32	The course organisers provide constructive criticism here	2.10±1.19	2.47±0.98	2.42±1.02	2.33
	37	The course organisers give clear examples	2.64±1.11	3.12±0.68	3±0.65	2.92
	39	The course organisers get angry in teaching sessions	1.96±1.23	2.34± 1.42	2.09±1.06	2.13
	40	The course organisers are well prepared for their teaching sessions	3.03±1.00	3.22±0.71	3.22±0.64	3.16
	49	I feel able to ask the questions I want	2.16±1.23	2.25±1.25	2.64±1.18	2.35
Student's academic self-perception	5	Learning strategies which worked for me before continue to work for me now	2.25±0.94	2.53±0.79	2.61±0.86	2.46
	10	I am confident about passing this year	3.18±0.97	2.98±0.90	3.05±0.87	3.07
	22	The teaching helps to develop my confidence	3.12±1.00	2.79±1.06	2.68±0.97	2.86
	26	Last year's work has been a good preparation for this years work	2.19±0.92	2.68±0.79	2.60±1.06	2.49
	27	I am able to memorize all I need	2.64±1.24	2.33±1.08	2.37±0.98	2.450376
	31	I have learned a lot about empathy in my profession	2.81±1.04	3.14±0.78	3.17±0.92	3.044743
	41	My problem solving skills are being well developed here	2.46±1.08	2.45±0.96	2.84±0.94	2.58
45	Much of what I have to learn seems relevant to a career in healthcare	2.98±0.80	3.10±0.77	3.10±0.80	3.06	
Student's perception of atmosphere	11	The atmosphere is relaxed during consultation teaching	2.53±1.17	2.57±0.91	2.53±1.09	2.54
	12	The course is well timetabled	2.82±1.19	3.05±1.05	3.23±0.78	3.03
	17	Cheating is a problem in this course	2.57±1.28	2.36±1.17	2.46±1.25	2.46
	23	The atmosphere is relaxed during lectures	2.29±1.34	2.86±1.00	2.68±1.10	2.61
	30	There are opportunities for me to develop interpersonal skills	2.24±1.22	2.35±1.09	2.40±1.06	2.33
	33	I feel comfortable in teaching sessions socially	2.59±0.98	2.62±0.92	2.52±0.87	2.57
	34	The atmosphere is relaxed during seminars/tutorials	2.07±1.20	2.38±1.05	2.55±1.07	2.33
	35	I find the experience disappointing	2.79±1.10	2.61±1.11	2.53±1.09	2.64
	36	I am able to concentrate well	2.88±1.06	2.36±1.11	2.87±0.88	2.70
	42	The enjoyment outweighs the stress of studying medicine	1.84±1.26	2.09±1.05	1.65±1.29	1.86
43	The atmosphere motivates me as a learner	2.67±1.04	2.88±0.98	2.67±1.02	2.74	
50	The registrars irritate the course organisers	2.75±1.27	2.84±1.13	2.80±1.03	2.80	
Student's social self-perception	3	There is a good support system for registrars who get stressed	1.74±1.10	1.76±1.22	1.45±1.16	1.65
	4	I am too tired to enjoy this course	1.60±1.22	1.55±1.07	1.74±1.01	1.63
	14	I am rarely bored on this course	2.36±1.35	2.67±1.14	2.56±1.03	2.53
	15	I have good friends in this course	2.87±0.99	2.71±0.97	2.90±0.99	2.83
	19	My social life is good	2.64±1.21	2.77±1.07	2.44±1.28	2.62
	28	I seldom feel lonely	2.55±1.26	2.42±1.10	2.47±1.22	2.48
	46	My accommodation is pleasant	3.05±1.03	2.96±0.88	2.59±1.11	2.87

score of the college was 130.576 and separately for 1st year, 3rd year and final year it was 128.38, 131.97 and 131.40 respectively, indicating that the college environment was perceived more positive than negative by the students.¹⁴

In the domain of Student's Perception of Learning (SPL) the score was 33.75(70.31%), 32.80(68.33%) and 32.61(67.93%) for 1st year, 3rd year and final year respectively with an average of 33.05(68.85%), indicating that 'student's perception about learning' in the college is more positive at all

Exploration of Strengths

levels.¹⁴ In the domain of Student's Perception of Teachers (SPT) the score was 26.05(59.20%), 29.24(66.45%) and 29.21(66.38%) for 1st year, 3rd year and final year respectively with an average of 28.166(64.01%), highlighting that the "teaching is moving in the right direction" at all levels in the institution.¹⁴ In the domain of Student's Academic Self-Perception (SASP) the score was 21.66(67.68%), 22.04(68.87%) and 22.45(70.15%) for 1st year, 3rd year and final year respectively with an average of 22.05(68.91%), showing that "student's academic self-perception" is more on the positive side at all levels.¹⁴ In the domain of Student's Perception of Atmosphere (SPA) the score was 30.08(62.66%), 31.02(64.62%) and 30.94(64.46%) for 1st year, 3rd year and final year

respectively with an average of 30.68(63.92%), highlighting that "students perceive the atmosphere" as more positive at all levels.¹⁴ In the domain of SSSP "Student's Social Self-Perception" the score was 16.84(60.14%), 16.87(60.25%) and 16.19(57.82%) for 1st year, 3rd year and final year respectively with an average of 16.63(59.39%), highlighting that students perceive that their "social life is not too bad."¹⁴

In this study 9 items, scored more than 3 by the students, were the real positive points in the college environment. These indicated that the students feel stimulated and encouraged to actively participate in teaching sessions and their teaching is student centered (items no. 1, 7, 13, 44). Moreover, they also recognize that their teachers are knowledgeable and

Table-II: Comparison of Dundee Ready Education Environment Measure (DREEM) Questionnaire Mean Scores Domain and Year-Wise (n=300)

Subscale/ Total	1st year	3rd year	Final year	Total (Mean)
Students perception of Learning	33.75/48 70.31%	32.80/48 68.33%	32.61/48 67.93%	33.05/48 68.85%
Students' perception of teachers	26.05/44 59.20%	29.24/44 66.45%	29.21/44 66.38%	28.166/44 64.01%
Student's academic self-perception	21.66/32 67.68%	22.04/32 68.87%	22.45/32 70.15%	22.05/32 68.91%
Student's perception of atmosphere	30.08/48 62.66%	31.02/48 64.62%	30.94/48 64.46%	30.68/48 63.92%
Student's social self-perception	16.84/28 60.14%	16.87/28 60.25%	16.19/28 57.82%	16.63/28 59.39%
Total score	128.38/200 64.19%	131.97/200 65.98%	131.40/200 65.70%	130.576/200 65.28%

Table-III: Thematic Analysis of Interviews

Inter view code	Quotations from interview transcripts	codes	Themes	Cat
1.1	Medical students would inadvertently face stress in their professional practice, because of the nature of this profession	Nature of profession	Universal finding	Stress and anxiety in Medical students
1.2	We agree with this that students are over burdened with studies	Agreed phenomenon		
2.2	I think that medical studies and stress are paired things. With this I mean that f we r not in stress u can't excel.	Stress is linked with medical studies, Needed to excel		
2.3	I think that literature also support that medical students feel more stressed than other students	Literature supports		
1.1	A lot of stress is related to the overwhelming content, numerous assessments, the manner in which assessments are conducted, the less use of formative assessments, highly competitive practice of medicine, and rigid timelines	Study content, Repeated assessments, Conduct of assessments, Less formative assessment Competitive environment,	Causes of stress in medical students	
1.2	Students get stressed because of competitions among peers, parental expectations, perceived financial burden and Social pressure.	Parental expectations, Financial burden Social Stress		
2.1	I think studies and particularly medical studies by itself is a stressful experience	Stressful experience		
2.1	Our parents have a lot of expectations from us. Another reason may be a totally new subjects, new environment, repeated assessments, competitive environment and fear of exam failure may be.	New subjects, Strange environment, Exam fear	Causes of stress in medical students	
2.2	It z not only first year students all students feel that there is huge responsibility on them and clear target to get excel	Desire to get excel		
2.3	I think in class three we r not only exposed to clinical environment but also we are going to study the basic subjects this is transitional year and I think definitely the work load is more.	Work load		
2.3	It is a competitive environment and definitely increases the stress.	Competitive environment		
2.3	Sir in my opinion most of us r stressed due to very busy and tight scheduling particularly in final year.	Time shortage	Causes of stress in medical students	
	i think in a competitive environment such of stress is not unusual	Competitive environment		

Exploration of Strengths

1.1	Yes, mentorship exists and should be strengthened further.	Mentorship program exists,	Mentorship program	Remedial measures to overcome burden and relieve stress in medical students
1.2	Mentorship program already exists in college and is purely student focused.	To be strengthened,		
1.2	The concerned teacher or mentor is enabled to find out the students who are more anxious and easily get stress, early in the mentor mentee meeting, so they can focus more on such students	Picking vulnerable students		
1.2	However, the mentors emphasize on the importance of time management and give tips regularly for the same workshops can be arranged to further improve the situation.	Tips on time management	time management workshop	
2.1	in this again I will say that proper time management is needed and the institute should train and guide the students in this regard also	Training by institute		
2.1	However it would be better that we students should be guided on proper time management	Students should be guided		
2.3	I m of the view that to help the students to cope with burden of studies and	Workshops on regular basis		
2.3	clinical work it is that we should arrange for them time management workshops on regular basis	Workshops on regular basis	Stress management workshops/ lectures	
2.1	If u ask my opinion I would suggest the college administration should arrange stress management workshops for students to equip the students with useful tools and techniques to overcome stressful situations.	To equip students to overcome stress		
2.1	there should be a mechanism not to allow students to be easy prey to	Mechanism to guide and		
2.2	stress again need proper guidance and training of students to face stressful situations probably by some workshops f I'm not wrong	train students		
2.3	I think they should arrange for us stress management programs and classes on this topic should be part of regular curriculum.	Stress management program should be part of curriculum	Students support group	
1.2	Develop peer group "Learn with each other", as students learn more with each other.	Learn from each other		
2.1	Another thing that I think that may be helpful will be to establish at class level student support groups so students could support each other in such situation	Class wise groups		
2.2	Better answer can be given by psychiatrist but we think that such stressed students should be identified and supported b4 they are affected and in this can be done f have support groups established among students	Early identification of stressed students		
1.1	Career counseling should be part of every medical school's working. We have also done this but randomly, it needs to be a regular feature	Regular activity of institute	Career counseling sessions	
2.3	Yes why not but still to have a clear picture of profession from now better is that college should arrange for carrier counseling program so that we should become more enlightened about our future	To be enlightened about future		
1.1	Yes, absolutely, they should b part of the curricular management forums.	Be part curricular forums	Students involvement	
1.1	In my experience students are more critical of their curricula and provide very intelligent and practical solutions to their problems.	Students are more critical,		
1.1	I would suggest to involve students in timetabling	Be involved in timetabling		
1.1	The fear of examinations is natural and it would remain to some extent, even in the best managed examinations	Constant finding,	Measures to relieve exam stress	
1.1	Unnecessary coercion in the conduct of examinations should be avoided.	Avoid frequent exams,		
1.1	Assessments should be spaced in a logical manner	proper interval in exams,		
1.1	Formative assessment should be used more frequently and the student should be informed of their weaknesses before the summative assessment with enough time to make up for the deficiencies that are identified	Formative assessment , feedback,		
1.1	Students can also be trained in self-assessment so that they can identify gaps in their performance before the teachers evaluate them	Self-assessment		
2.1	I think it is much better than other colleges that why we had chosen to get admitted in pmc	Much better	Overall impact with suggestions	College environment
2.1	Credit goes to the wonderful administrators and hardworking faculty	Wonderful administration hardworking faculty		
2.2	Simply I will say that the college environment is superb and the credit goes to well trained and qualified teachers, very kind administration and a vigilant DME department	Trained staff, Nice administration, Vigilant DME		
2.3	I think the environment prevailing in college is exemplary I would suggest that wise and useful involvement of students in making academic calendar would further improve.	Involvement of students in curricular forums		
	I have not noticed Negative impacts of stress on students' performance but an eye should be kept	No Negative effects		

Causes of overburden and stress: intense syllabus, excessive assignments, examination fear, high parental expectation, peer competition, lack of leisure time, poor time management, aspiration for higher studies and insecurities regarding future professional life

Remedial measures: Stress and time management workshops at regular intervals, establishing Students support groups, strengthening Mentorship program, Frequent formative assessment with robust feedback and Structured involvement of students in the curricular forums

College environment: students are well satisfied with the educational environment of the college and they feel that Medical education department of the college and qualified faculty are the strengths of the institute.

come well-prepared for teaching sessions (items no. 2, 40). Students are also academically confident in passing their exams (item no. 10), and are also satisfied that whatever has been taught will be helpful in their

career (item no. 45). They are very positive regarding the timetabling of the course (item no. 12) indicating effectiveness of the Medical Education Department of the college. Likewise, students of clinical classes scored 3 items, related to clinical lessons, more than 3 indicating that they feel well-prepared for their future profession with good communication skills and have learned about empathy in their professional life (items no. 21, 18, 31). Thematic analysis also revealed that students are well satisfied with the college environment and consider the Medical Education Department and qualified faculty as strengths of the institute.

In this study students scored 3 items less than 2 indicating that they feel they are overburdened with the studies (item no. 4), stressed (item no. 42) and that there should be a support system for students who are stressed (item no. 3).

In the remaining 35 items, the overall mean score was between 3 and 2, therefore fell in the area that needed further enhancement.

Thematic analysis of interview transcripts (Table-III) revealed that stress prevalent in medical students is primarily due to the intense syllabus, excessive assignments, fear of failing in the professional examination, high parental expectations, lagging behind in time management and insecurities regarding their future professional life. Thematic analysis also revealed that these factors can be overcome by taking remedial measures in the form of establishing support groups for the students, arranging stress management workshops, strengthening mentorship program, conducting frequent formative assessment with robust feedback and involvement of students in curricular forums.

DISCUSSION

Dundee Ready Education Environment Measure (DREEM) questionnaire score in literature search varies from 78 to 139 out of 200.9, 13 We compared our study with some recently conducted national and international studies and found that in these studies the overall scores reported are 125.29/2001, 105/2004, 114.40/2005, 107.50/2006, 122/20015, 125.7/20016, 112.38/20017, 116.6/20018, and 118.40/200.19 This revealed that our results are not only comparable but also better than some studies. In literature search it was also found that in most of the studies the percentage in the domain of Social Self-Perception is poorer than other domains and the same was seen in our study.²⁰

Medical education is highly competitive and stress full field throughout the world.²¹ Overburdening with studies and stress in medical students has been reported in many other studies and therefore appears to be a common problem in medical education.²²⁻²⁵

Stress is a sense of feeling when a person perceives that demands are more than the individual's resources.²³ Minor level of stress is beneficial as it enables the student to become more dynamic and better performer, promotes healthy competition in peer groups and helps to excel in academics but higher level of stress has been linked in literature to poor academic performance.^{24,25}

Students attending medical college are exposed to enormous influences physically and even psychologically. Literature review revealed that academic related factors are the main source of stress in under graduate medical students and in our study we also found that these are the main contributing factors for stress in students.^{23,24} However, as identified in this study and also supported by literature review adopting coping strategies will effectively overcome students' burden and will relieve their stress.^{22,23}

CONCLUSION

The present study indicates that student's perception of college educational environment is more positive. Important parameters of college environment were either strongly positive or moving in a positive direction, however some improvements are needed across all domains. Overburdening with studies and stress in medical students were identified as the problem areas. Remedial measures that were identified in the qualitative part of this study included establishing support groups for the students, arranging stress management workshops and strengthening mentorship programs.

Conflict of Interest: None.

Funding Source: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

MUH & AA: Conception, study design, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Salih KMA, Idris MEA, Elfaki OA, Osman NMN, Nour SM, Elsidig HA, et al. MBBS teaching program, according to DREEM in College of Medicine, University of Bahri, Khartoum, Sudan. *Adv Med Educ Pract* 2018; 9: 617-622. <http://dx.doi.org/10.2147/AMEP.S160218>

Exploration of Strengths

- Khan JS, Tabasum S, Yousafzai UK. Determination of medical education environment in Punjab private and public medical colleges affiliated with university of health sciences, Lahore-Pakistan. *J Ayub Med Coll Abbottabad* 2009; 21(4):162-170.
- Khan JS, Tabasum S, Yousafzai UK, Mukhtar O. Measuring the medical education environment in undergraduate medical colleges across Punjab, Pakistan. *Biomedica* 2011;27(1):14-18.
- Imran N, Khalid F, Haider II, Jawaid M, Irfan M, Mahmood A, et al. Student's perceptions of educational environment across multiple undergraduate medical institutions in Pakistan using DREEM inventory. *J Pak Med Assoc* 2015; 65(1):24-28
- 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 (5): 417-421.
- Noreen K, Khan KA, Nehra RA. Students' perception of learning environment using Dundee Ready Education Environment Measure (DREEM) inventory. *Pak J Public Health* 2018; 8(2): 112-116. <https://doi.org/10.32413/pjph.v8i2.154>
- Riquelme A, Oporto M, Oporto J, Méndez J, Viviani P, Salech F, et al. Measuring students' perceptions of the educational climate of the new curriculum at the Pontificia Universidad Católica de Chile: performance of the Spanish translation of the Dundee Ready Education Environment Measure (DREEM). *Educ Health* 2009; 22 (1): 112-112.
- Roff S, McAleer S, Harden RM, Al-Qahtani M, Ahmed AU, Deza H, et al. Development and validation of the Dundee Ready Education Environment Measure (DREEM). *Med Teacher* 1997; 19 (4): 295-299. <https://doi.org/10.3109/01421599709034208>
- Khan JS, Tabasum S, Yousafzai UK, Fatima M. DREEM ON: Validation of the Dundee Ready Education Environment Measure in Pakistan. *J Pak Med Assoc* 2011; 61(9):885-888.
- Getu LR, de Oliveira F, Joaquim EV, Leonardo S. Psychometric properties of the Dundee Ready Educational Environment Measure (DREEM) applied to medical residents. *Med Teacher* 2005; 27 (4): 343-347. <https://doi.org/10.1080/01421590500046387>
- Creswell JW. *Research Design Qualitative, Quantitative, and mixed methods approaches*. 2nd ed. Sage, 2003.
- Creswell JW. *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*. 4th ed. Pearson; 2012.
- Roff S. The Dundee Ready Educational Environment Measure (DREEM) – a generic instrument for measuring students' perceptions of undergraduate health professions curricula. *Med Teacher* 2005; 27 (4):322-325. <https://doi.org/10.1080/01421590500151054>
- SMcAleer S, Roff S. A practical guide to using the Dundee Ready Education Environment Measure (DREEM). *AMEE Guide* 2001; 23: 29-33.
- Shah DK, Piryani S, Piryani RM, Islam MN, Jha RK, Deo GP. Medical students' perceptions of their learning environment during clinical years at Chitwan Medical College in Nepal. *Adv Med Educ Pract* 2019; 10: 555-62. <http://doi.org/10.2147/AMEP.S203377>
- Rehman R, Ghias K, Fatima SS, Hussain M, Alam F. Dream of a conducive learning environment: One DREEM for all medical students. *J Pak Med Assoc* 2017; 67 (1): 7-11.
- Khan SQ, AL-Shahrani M, Khabeer A, Farooqi FA, Alshamrani A, Alabduljabbar AM, et al. Medical students' perception of their educational environment at Imam Abdulrahman Bin Faisal University, Kingdom of Saudi Arabia. *J Family Community Med* 2019; 26(1): 45-50. https://doi.org/10.4103/jfcm.JFCM_12_18
- Zafar A, Asghar S, Fahim MF. A DREEM Based Appraisal of Educational Environment at Dental Colleges: Comparing Pakistan and Turkey. *J Pak Dent Assoc* 2020; 29(3):135-139. <https://doi.org/10.25301/JPDA.293.135>
- Gupta M, Lehl SS, Singh R. The Educational Environment of the Indian Undergraduate Medical Students: Is it Good Enough? *J Assoc Physicians India* 2018; 66 (1): 20-26.
- Chan CYW, Sum MY, Tan GMY, Tor PC, Sim K. Adoption and correlates of the Dundee Ready Educational Environment Measure (DREEM) in the evaluation of undergraduate learning environments – a systematic review. *Med Teach* 2018; 40(12):1240-1247. <https://doi.org/10.1080/0142159X.2018.1426842>
- Bala S, Das S, Jatana R, PundeerR, Kundu P, Kaur R. The study for sources of stress and management among medical students. *Int j Basic Clin Pharmacol* 2018; 7(5): 961-965. <http://dx.doi.org/10.18203/2319-2003.ijbcp20181643>
- Jobby A, Viswasom A. Impact of Counselling Services in Stress Reduction among First Year MBBS Students. *J Clin Diagn Res* 2018; 12(4): JC15-JC18. <https://doi.org/10.7860/JCDR/2018/33963.11393>
- Bhavani M, Ahmed M, Prashantha B. Perceived stress and source of stress among undergraduate medical students of Government Medical College, Mysore. *Int J Community Med Public Health* 2018; 5(8):3513-3518. <http://dx.doi.org/10.18203/2394-6040.ijcmph20183090>
- Joseph N, Nallapati A, Machado MX, Nair V, Matele S, Muthusamy N, et al. Assessment of academic stress and its coping mechanisms among medical undergraduate students in a large Midwestern university. *Curr Psychol* 2021; 40(6):2599-2609. <https://doi.org/10.1007/s12144-020-00963-2>
- Sanchez DJ, Strauman TJ, Compton S. Impact of Student Perceptions of the Educational Program on Burnout in Medical School. *Med Sci Educ* 2019;29(2): 1077-1087. <https://doi.org/10.1007/s40670-019-00812-3>