EVALUATING STUDENT PERCEPTIONS OF LEARNING ENVIRONMENT USING DREEM IN PHYSICAL THERAPY STUDENTS DURING E-LEARNING

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Abstract

Objective: This study aims to evaluate perceptions of learning environment in physical therapy students during E-learning.

Material and Method: In this cross-sectional study, data was collected through non-probability convenient sampling technique from Physical Therapy students of different universities in Rawalpindi and Islamabad from August 2020 to February 2021. The students of either gender with a minimum of one semester of online learning experience were included but less than one semester online learning experience were excluded. After consent of the participants, the study employed the 50-item Dundee Ready Education Environment Measure (DREEM) questionnaire to assess students' perceptions in five domains: academic self-perception, learning, teaching, atmosphere, and social self-perception. Online self-structured questionnaire was developed and shared through communication media platform and data analysis was made through SPSS version 27.

Results: Of the n=274 physical therapy students, there were n = 225 undergrads (DPT) and n = 49 postgrads (MSPT). Of them, n = 208 were female and n = 66 were male with mean age 22.60 ± 2.413 years. The overall DREEM scores indicated a more positive educational perception (55.51%). Subscale scores for learning, teaching, academic, atmosphere, and social perception were 58.04%, 56.52%, 55.68%, 57.71%, and 54.95%, respectively. The items 3, 8, 14, 39 and 50 were scored less than two while the majority of scores were positive, specific items related to teacher behaviour and student stress revealed areas requiring attention and improvement.

Conclusion: Physical Therapy students in the studied region generally perceive their learning environment positively. However, identified problematic areas, such as teacher behaviour and student stress, suggest the need for targeted interventions.

Keywords: Dundee Ready Education Environment Measure (DREEM), E-learning, Learning Environment, Physical Therapy Students, Student Perceptions.

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INTRODUCTION

Online learning has grown significantly during the last ten years. About 90% of higher education institutions are thought to provide some kind of online education in order to meet the growing demand for it. Online education is no longer seen as anything novel(1). Everything that takes on in academic institutions, departments, medical schools, and universities is referred to as the educational environment(1-3). The educational environment is one of the most important aspects in determining whether an effective curriculum is successful and, subsequently, how well students do academically(4, 5). According to Bloom, "the conditions, external stimuli and forces which may be physical, social, as well as intellectual forces which challenge on the individual and influence students' learning outcomes" constitute the educational or learning environment(4). The quality of the curriculum is reflected in the educational environment, which is essential for learning(1). Medical education have become very complex in the 21st century, with challenges confronting both the structure and delivery of effective education. The expansion in the knowledge base across all health professions, combined with rapid and continuing advances in teaching and assessment methods and the evolution and application of new technologies in education, exert unprecedented pressure on teaching and learning in health professions education(6). Learning objectives, teacher expertise, resources, tactics, assessments, timetabling, student help, facilities, classrooms, group size, and the atmosphere are some of the aspects that have an impact on the educational environment. Goals, satisfaction, instructor behaviour, student behavior, and vice versa are all impacted. The educational environment acts as a change agent and a curriculum evaluation tool(1). Perception of education environment has direct influence on motivation, contentment and crucial for effective learning of medical student(2, 4). Since educational environment is measurable, evaluation of education environment is important to bring about the necessary changes and improvement where required. Understanding the medical student's perception about the education environment has great impact in evaluating deficiencies in exiting medical curriculum, to make comparison between different groups and to make necessary changes accordingly. It can play essential role in planning and implementing the comprehensive curriculum. Learning experience at medical college has great influence on student's lifelong knowledge and practice(2). Learning, goals, success, and wellness are all impacted by the learning environment. At the undergraduate and graduate levels, the educational

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environment needs to be improved. Social lives, contributions, learning, and professional advancement are all negatively impacted by a situation that is not conducive to learning. Success and engagement are encouraged by a positive environment, which is shaped by cultural backgrounds, resources, staff, curriculum, and expectations(1). The Dundee Ready Education Environment Measure (DREEM) is validated international educational tool used widely to assess the medical students perception about their education environment(2).

The Physical Therapy is an emerging discipline in Pakistan in rehabilitation sciences. As with any other program, it is crucial to periodically evaluate the educational environment of the institute as perceived by its students. A number of studies have been done to evaluate the educational environment of medical and nursing colleges internationally and in Pakistan. Being the part of teaching faculty we are constantly working on devising the ways and adopt new teaching and learning strategies to improve existing Physical Therapy education system of country. No study that explores the educational environment of a physical therapy students has been found. This has led us to explore the students perception about the education environment of our Physical Therapy institutes. This would definitely help the stake holders and policy makers to identify the weak areas and implement the necessary changes as required.

The objective of this current study to measure educational environment perception of Physical Therapy students using DREEM.

METHODOLGY

This cross-sectional study was conducted on students of Physical Therapy. After approval from Research Ethical Committee of the Riphah College of Rehabilitation and Allied Health Sciences with Ref: RIPHAH/RCRS/REC/Letter-00749. The duration of the study was six months after approval from ethical committee. The participants must have one semester experience of online learning from different universities and institutes of Physical Therapy in Rawalpindi and Islamabad while students not having online learning experience were excluded from this study.

The sample size was n=377, calculated through Rao software with 20,000 population size, 95% confidence interval and 5% margin of error. Data from n=316 students was collected, 42 students responded incomplete information, so data of remaining n=274 students was analyzed. The data was collected using convenient sampling through communication media platform in docx file

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and respondents answered on soft-form data. An online questionnaire was developed using the DREEM and was distributed to the students via email and WhatsApp.

Dundee Ready Education Environment Measure (DREEM) questionnaire has 50-items, closed-ended inventory based on students' perceptions of five areas related to their educational environment. These are: learning, teaching, academic self-perception, atmosphere, and social self-perception. Items are scored on a 5-point Likert scale as follows: 4 = strongly agree, 3 = agree, 2 = unsure, 1= disagree, and 0 = strongly disagree(1, 5, 7-18). The nine items in which 4, 8, 9, 17, 25, 35, 39, 48 and 50 were having reverse order(1, 4, 8, 13, 14, 16, 17) and reverse coding respectively. The descriptive statistics was used for data presentation, in the form of frequency, percentages, means and standard deviation. Mean scores were calculated at individual item, domains, sub scales and scales of DREEM inventory. The Practical Guide described by McAleer and Roff13 for interpreting the overall and subscale scores, and the number of items in each subscale is given in Table 1. The SPSS ver. 27 was used for data analysis.

Table 1: Guideline to Interpret Total DREEM, Individual Items and Domains Score(2, 3, 5, 14-19)

Total DREEM Score (Max=200)		
0-50	0-25%	Very Poor
51-100	25.1-50%	Significant Problem
101-150	50.1-75%	More Positive Than Negative
151-200	75.1-100%	Excellent
Individual Item (Max=4)		
Less than or equal to 2	0-50%	Problem Areas
Between 2 and 3	50.1-75%	Could be Enhanced
Greater than 3	75.1-100%	Real Positive Points
Domains		
I. SLP (Max=48)		
0-12	0-25%	Very Poor
13-24	25.1-50%	Negatively Viewed Teaching
25-36	50.1-75%	More Positive Perception
37-48	75.1-100%	Teaching Highly Regarded
II. STP (Max=44)		

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0-11	0-25%	Abysmal
12-22	25.1-50%	In Need of Retraining
23-33	50.1-75%	Moving In Right Direction
34-44	75.1-100%	Teaching Highly Regarded
III. SAcP (Max=32)		
0-8	0-25%	Feelings of Total Failure
0-16	25.1-50%	Many Negative Aspects
17-24	50.1-75%	Feeling More on Positive Side
25-32	75.1-100%	Confident
IV. SAtP (Max=48)		
0-12	0-25%	Very Poor Environment
13-24	25.1-50%	Many Issues Need Changing
25-36	50.1-75%	More Positive Attitude
37-48	75.1-100%	Overall Good Feelings
V. SSP (Max=28)		
0-7	0-25%	Miserable
8-14	25.1-50%	Not a Nice Place
15-21	50.1-75%	Not Too Bad
22-28	75.1-100%	Very Good Socially

RESULTS

There were n=274 participants of n=225 under-graduates (DPT) and n=49 post-graduates (MSPT) students having online learning experience whereas n=208 were female and n=66 were male. So, there were n=176 female and n=49 male in under-graduate (DPT), and there was n=32 female and n=17 male in post-graduate (MSPT). The age groups of 18 to 22 years had 155 participants, 23 to 26 years had 105, and 27 to 30 years had 14 participants. The mean age of the participants was 22.60 ± 2.413.

The overall DREEM scores showed that Physical Therapy students had more positive educational perception (above 50%). The domains of DREEM had also score above 50 % which showed more positive educational environment than negative. The mean scores of all items of DREEM is between 2 and 3, means that these areas can be enhanced except items 8, 39 and 50 in domain teacher perception, 3 and 14 in social perception which have score less than 2, so these

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are problematic areas which need attention to improve for better educational environment perception.

Table 2: Total DREEM & Its Domains

Variable	Total DREEM & Its Domains				
	No of Items	Maximum Score	Mean (SD)	%	Interpretation
SLP	12	48	27.86 (6.74)	58.04	More Positive Than Negative
STP	11	44	24.87 (4.27)	56.52	More Positive Than Negative
SAcP	08	32	17.82 (5.28)	55.68	More Positive Than Negative
SAtP	12	48	27.70 (4.98)	57.71	More Positive Than Negative
SSP	07	28	15.39 (3.14)	54.95	More Positive Than Negative
Total DREEM	50	200	111.03 (19.13)	55.51	More Positive Than Negative

Table 3: DREEM Items Scores According to Domains

Domain	Item No	Statement	Mean (SD)	Interpretation
SLP	1	I am encouraged to participate in class	2.44 (0.84)	Could be enhanced
	7	The teaching is often stimulating	2.36 (0.82)	Could be enhanced
	13	The teaching is student centered	2.33 (0.81)	Could be enhanced
	16	The teaching help to develop my competence	2.24 (0.96)	Could be enhanced
	20	The teaching is well focused	2.26 (0.98)	Could be enhanced
	22	The teaching helps to develop my confidence	2.19 (1.10)	Could be enhanced
	24	The teaching time is put to good use	2.33 (0.92)	Could be enhanced
	25*	The teaching overemphasizes the factual learning	2.26 (0.78)	Could be enhanced
	38	I am clear about my learning objective off road	2.25 (0.78)	Could be enhanced
	44	The teaching encourages need to be active learner	2.49 (0.80)	Could be enhanced
	47	Long-term learning is emphasized over short term learning	2.42 (0.78)	Could be enhanced
	48*	The teaching is too teacher centered	2.29 (0.77)	Could be enhanced
STP	2	The teachers are knowledgeable	2.86 (0.71)	Could be enhanced
	6	The teachers deliver research-led teaching	2.29 (0.83)	Could be enhanced
	8*	**The teachers ridicule the students**	**1.83 (0.85)**	**Problematic area**
	9*	The teachers are authoritarian	2.38 (0.74)	Could be enhanced
	18	The teachers help me to develop my practical skills	2.15 (1.13)	Could be enhanced
	29	The teachers are good at providing feedback to students	2.42 (0.91)	Could be enhanced
	32	The teachers provide constructive criticism here	2.02 (0.84)	Could be enhanced
	37	The teachers give clear examples	2.65 (0.74)	Could be enhanced
	39*	**The teachers get angry in class**	**1.84 (1.02)**	**Problematic area**
	40	The teachers are well prepared for their classes	2.60 (0.85)	Could be enhanced
	50*	**The students irritate the teachers**	**1.83 (1.12)**	**Problematic area**

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SAcP	5	Learning strategies which worked for me before continue to work for me now	**2.04** (0.83)	Could be enhanced
	10	I am confident about passing this year	**2.67** (1.03)	Could be enhanced
	21	I feel I am being well prepared for my career	**2.10** (1.12)	Could be enhanced
	26	Last year's work has been a good preparation for this year's work	**2.33** (1.01)	Could be enhanced
	27	I am able to memorize all I need	**2.25** (0.91)	Could be enhanced
	31	I have learned a lot about the way scientific research is carried out	**2.02** (0.88)	Could be enhanced
	41	My problem-solving skills are being well developed here	**2.09** (0.96)	Could be enhanced
	45	Much of what I have to learn seems relevant to a career in biological sciences	**2.31** (0.81)	Could be enhanced
SAtP	11	The atmosphere is relaxed during laboratory/practical/fieldwork classes	**2.20** (0.95)	Could be enhanced
	12	The course is well timetabled	**2.20** (0.99)	Could be enhanced
	17*	Cheating is a problem in this faculty	**2.11** (1.00)	Could be enhanced
	23	The atmosphere is relaxed during lectures	**2.51** (0.84)	Could be enhanced
	30	There are opportunities for me to develop my interpersonal skills	**2.19** (0.89)	Could be enhanced
	33	I feel comfortable in class socially	**2.57** (0.85)	Could be enhanced
	34	The atmosphere is relaxed during seminars/tutorials	**2.30** (0.85)	Could be enhanced
	35*	I find the experience disappointing	**2.03** (0.93)	Could be enhanced
	36	I am able to concentrate well	**2.19** (0.89)	Could be enhanced
	42	The enjoyment outweighs the stress of the course	**2.26** (0.87)	Could be enhanced
	43	The atmosphere motivates me as a learner	**2.57** (0.87)	Could be enhanced
	49	I feel able to ask the questions I want	**2.57** (0.88)	Could be enhanced
SSP	3	**There is a good support system for students who get stressed**	**1.99 (1.03)**	**Problematic area**
	4*	I am too tired to enjoy the course	**2.20** (0.91)	Could be enhanced
	14	**I am rarely bored on this course**	**1.98 (0.94)**	**Problematic area**
	15	I have good friends in this faculty	**2.22** (1.01)	Could be enhanced
	19	My social life is good	**2.54** (0.91)	Could be enhanced
	28	I seldom feel lonely	**2.03** (1.07)	Could be enhanced
	46	My accommodation is pleasant	**2.43** (0.79)	Could be enhanced

DISCUSSION

The primary objective of this current study to measure educational environment perception of Physical Therapy students using DREEM in Pakistan. The findings of our study's overall DREEM scores (111.03/200, 55.51%) are comparable to those of previous studies (107.5/200, 53.7%) by Noreen K et al., (126/200, 63%) by Rehana et al., and studies from India (107/200, 53.5%) & (114/200, 57%)(2). Mayya and Roff reported (107/200, 53.5%) from Kasturba Medical College in India(6) Studies from several nations, including Malaysia (125.3/200, 62.6%), Nepal

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(129/200, 64.5%), Sri Lanka (108/200, 54%), and Trinidad (109/200, 54.5%), have been reported. The Canadian Memorial Chiropractic College reported the highest score (97/200, 48.5%) and the lowest score (89/200, 44.5%) at College of Medicine at King Saud University(2) and Zawawi and Elzubier reported a global score of (100/200, 50%) from Saudi Arabia(6). The results of our study have revealed that education environment perception is more positive than negative. According to research conducted at an Australian university, students' perceptions of the learning environment were generally positive, with a high DREEM score of (137.3/200, 68.6%), the study showed. This illustrated the institution's use of a student-centered method, which resulted in positive behavior from the students(20). Miles and Leinster reported (143/200, 71.5%) from the University of East Anglia in the United Kingdom, while Dunne et al reported (124/200, 62%) from a study of various United Kingdom medical schools(6).

In current study, the scores of subscales of DREEM, learning perception, teacher perception, academic perception, atmosphere perception and social perception were 58.04%, 56.52%, 55.68%, 57.71% and 54.95% respectively.

On the analysis of individual domains of DREEM questionnaire, the domain student learning perception (SLP) was measured (27.86/48, 58.04%) which was more positive than negative. The score of individual items in this domain was greater than 2 which show that perception regarding learning was good in universities and institutes of twin cities of Pakistan. Numerous studies have revealed that in addition to clinical expertise and knowledge, students need strong interpersonal and communication skills to succeed in the medical industry(7). Developing pupils' skills is given greater weight than merely imparting factual knowledge(2).

Regarding domain student teacher perception (STP), the scores (24.87/44, 56.52%) were more positive than negative indicating good teacher perception. Having more positive score in this domain, three items "The teachers ridicule the students", "The teachers get angry in class" and The students irritate the teachers had scores less than 2 showing problematic areas. The statements with poor scores show that teachers have communication problems when putting the curriculum into practice(3). Other items had more positive scores than negative indicating positive perception about teaching but some personal qualities like get angry in class, teacher ridicule the students and students irritate the teachers need to addressed in order to improve

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students perception toward teaching. Another suggestion is that instructors should use continual, planned, organised, and student-focused motivating tactics in order to take a more active part in maintaining students' motivation. Research indicates that teachers' personalities and attitudes have an impact on students' motivation. Furthermore, Weller (2005) proposed that internal motivation is more durable and significant than external drive, which needs ongoing reinforcement(7). Adult learning principles state that instruction should be learner-centred and that a teacher's function should shift from imparting knowledge to that of a facilitator. Instead of making fun of their pupils, teachers should actively include them in their education and encourage them to reflect on what they have learned(2).

Regarding domain students academic perception (SAcP), the results (17.82/32, 55.68%) were more positive than negative showing positive academic perception of students toward learning environment. All items of this domain score between 2-3, means there is need to be improved academic perception for good educational environment. Furthermore, integrated curriculum implementation is still lacking in our institutes. Basic and clinical sciences are still taught to students in a conventional way, with distinct classrooms for each. This explains why pupils are unable to apply what they have learned in the past to the work they are doing today. The goal of integration is to dissolve the boundaries between clinical and fundamental sciences and enable people to use their prior knowledge into their present practice. This idea of integrated curriculum is gaining popularity around the globe. Integration makes it easier for newly learned information to be retained and for new abilities to be developed via practice and repetition(2).

The domain students atmosphere perception (SAtP), the results (27.70/48, 57.71%) were more positive than negative, showing positive atmosphere perception of students toward learning environment. All items of this domain score between 2-3, means there is need to be improved atmosphere perception for good educational environment. Research has showed that medical students' overall performance might be negatively impacted by stress during their education. Academics and surroundings can both cause stress. To ensure that students may achieve to the best of their ability, counselling cells and student support systems must be established(2).

Regarding domain students social perception (SSP), the results (15.39/28, 54.95%) were more positive than negative indicating positive social perception of students toward learning environment. The two items "There is a good support system for students who get stressed" and I

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am rarely bored on this course were have score less than 2 indicating problematic area. That students were stressed and really bored of their course. These findings also strongly suggestive of remedial action in curriculum design and teaching strategies. Other items also score between 2-3, showing there is need to be improved.

These scores of subscales of DREEM were more positive than negative, showing good educational environment of Physical Therapy sciences in twin cities of Pakistan. This is probably due to the fact that in case of a favourable learning environment, students get more satisfaction with their academic placements(21).

Our study has highlighted the weak areas and provided the base line data for curriculum committee and other stake holders to implement necessary changes. Target strategies need to formulate to address the particular deficiencies and to strengthen the education environment of our institute. There is dire need of implementation of integrated curriculum. Faculty development programs and training courses should be initiated. There is need to shift the teaching learning strategy from teacher centered to student centered approach. Teaching strategy should be changed from large class lecture to small group problem based learning that will help to develop higher order skills and enable them to integrate the acquired knowledge into clinical practice. There is need to restructure clinical rotation program and development of student support system. Our study has provided the base line data for further comparative study after implementing necessary changes in order to access the improvement.

Conclusion: Physical Therapy students in the studied region generally perceive their learning environment positively. However, identified problematic areas, such as teacher behavior and student stress, suggest the need for targeted interventions. Recommendations include implementing integrated curriculum, faculty development programs, and transitioning to student-centered teaching approaches. These findings provide a baseline for curriculum improvements and underscore the importance of ongoing evaluation and enhancement.

Limitations: The reliance on self-reported data through an online questionnaire may introduce response bias, and the exclusion of students without online learning experience may limit the generalizability of the findings. The study focused on perceptions without directly assessing the impact of the educational environment on academic performance or well-being.

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