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ORIGINAL ARTICLE

Comparison of the Educational Environment at a Medical College under Two Different Curricula

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ABSTRACT

Objective: To compare the perceptions of students regarding the educational environment at a medical college which underwent a curricular change using the Dundee Ready Education Environment Measure (DREEM) at two different points in time.

Methods: A comparative cross-sectional study was conducted at Wah Medical College, Punjab, Pakistan. The DREEM instrument was distributed in 2015 to students in all five years of the MBBS program and in 2019 to students in years 1-3 of the MBBS program.The DREEM questionnaire comprised of five categories which included learning, teaching, academic self-perception, atmosphere, and social self-perception.

Results: A total 692, participated in the study [400 (57.8%) students in 2015 and 292 (42.2%) in 2019]. The total median DREEM score in 2015 was 122 (134-111) whereas in 2019, the overall median DREEM score slightly increased up to 126 (142-103) (p-value 0.850). The comparison of the two different curricula with categories of DREEM inventory score showed that a significant association of two curricula was observed with students' perception about learning (p-value <0.001), positive perception about course organizers (p-value <0.001), atmosphere (p-value <0.001), and academic self-perception (p-value 0.031).

Conclusion: Curricular shift had not made a significant impact on the overall educational environment and the institute was able to maintain a healthy learning environment.

Keywords: Educational environment, student perceptions, Undergraduate medical education, curriculum shift, hidden curriculum.

INTRODUCTION

The educational environment refers to the contexts, the cultures and the physical environments that are unique to an educational institute.[1-2] Being used as a synonym with learning environment and educational climate, it is a broad concept. Educational or Learning environments are constructed in particular ways, with choices made at institutional and classroom levels about pedagogic measures, assessment and evaluation measures, relations between teacher and learner, relations between types of learners, the physical infrastructure arrangements and the overall atmosphere of the institute. It comprises of all things that surrounds the educational organization and is characterized by its policies, its reward and consequence equation, and the pressure students face as a result of their educational experience in the institute.[3] Student learning is greatly affected by the educational environment they experience.[4] It contributes to their overall wellbeing, satisfaction with their education and future aspirations of the students. The educational environment is a dynamic entity and is continuously evolving. It is a measurable element that has the potential to improve the quality of education itself. It is recommended that routine assessment of the educational environment should be a policy of an institution's educational practice. Diversity in medical student's demographics have further strengthened this need. The improvements that are being made in medical curricula also call for a periodic reassessment of the educational environment. DREEM inventory is a validated, widely used tool to assess the learning environment especially in medical field.[5]

Wah Medical College is a private sector medical college in Punjab Pakistan. For almost 15 years, the college remained affiliated with one of the largest public sector universities of the country. Students, at the college

have performed exceptionally well, with various academic achievements to their name and over 1467 students have graduated. However, a recent paradigm shift took place in 2017 when the college changed its affiliation and became registered under a new university. Thus, currently we, at WMC are in a unique time in our history as we have students in our earlier years of medical school (year 1 to 3) under an integrated curriculum with a different curricular style and those in their last two years (4 and 5) under an older university with a traditional style of teaching and assessment. This study aims to gauge the educational environment at the college in this time of our history and identify the differences if any (identified by the students). Thus, trying to determine whether a new university with its different curriculum, newer teaching & changed assessment strategies, created a difference in our educational environment.

METHODS

The study is a comparative cross-sectional study conducted at Wah Medical College, Wah Cantonment, Punjab, Pakistan. Ethical approval from the institutional review board of Wah Medical College was obtained prior conduction of the study (WMC/ERC/IRB/005). The MBBS program at the college runs over five years. In 2015, the educational environment at the college was assessed using the DREEM questionnaire.[6] Data was collected from students in all five years of the MBBS program. The college underwent a change in university affiliation in 2017 resulting in a change in curriculum implementation and assessment. Keeping this in mind, in 2019, the educational environment was again evaluated and students from year 1 to year 3 who were studying the new university curriculum were included. Students from year 4 and 5 were excluded as they were not affiliated with the new university. All willing students who signed the consent form were included in the study.

The DREEM inventory questionnaire was used to assess the perception of students regarding the educational environment under two different educational curricula. DREEM is a 50-items, self-administered, closed-ended questionnaire based on students' recognitions of five main aspects related to their educational environment. These include learning, teaching, academic self-perception, atmosphere, and social self-perception. The 50 items questionnaire includes 12 questions for students' perception about learning, 11 questions about faculty/course organizers, 8 about academic self-perception, 12 about atmosphere, and 7 about social self-perception. Students mark answers on a Likert scale of 1 to 5. Higher scores for each category are demonstrative of the perfect educational environment with a total conceivable score of 200. However, 9 of the 50 items (number 4, 8, 9, 17, 25, 35, 39, 48 and 50) are negatively phrased statements and are scored reversely. McAleer and Roff [7-8] have described a practical guide for interpreting the overall and subscale scores, and the number of items in each subscale. This guide (Table 1) has also been used for interpretation of scores in this study.

Data analysis was performed using statistical packages for social sciences (SPSS) software 21.0. Median and inter-quartile ranges were reported for quantitative variable scores after checking normality by Shapiro-Wilk test. Frequencies and percentages were computed for categories of five subscales of DREEM inventory, gender, year of study and number of students studying in two different curricula (2015, 2019). Inferential statistics were explored using Chi-square test. Moreover, Mann-Whitney U test was applied to compare the median difference of five subscales of DREEM inventory with two different years of data. p-values ≤ 0.05 taken as significant.

RESULTS

A total of 692 students participated in the study. Four hundred (57.8%) students in 2015 and 292 (42.2%) students in 2019. There were 338 (48.8%) males and 354 (51.2%) females.

The total median DREEM score in 2015 was 122 (134-111) whereas in 2019, the overall median DREEM score slightly increased up to 126 (142-103) with a p-value of 0.850 which indicated that the learning environment at the college almost remained the same and no significant difference was observed between 2015 and 2019 cohorts of MBBS students (Table 2).

The median difference of five sub scales of DREEM inventory showed statistically significant difference regarding students' perception of course organizers (p-value <0.001) and students' perception of atmosphere (p-value <0.001) with respect to two different curricula. In particular, there was a higher median score for students' perception of course organizers in 2019 as compared to the students of 2015, i.e. 27 (31-24) and 25 (28-22) respectively. According to effect size the difference is higher in students' perception of atmosphere and students' perception of course organizers as compare to others (0.388, 0.326). However, the median score of students' perceptions about atmosphere was higher among students' of 2015 batch as compared to students' of 2019 batch, i.e.

Table 1: Guide for interpreting and Subscale Scores

Domain	No. of items	Scores	Interpretations
Students' Perception of Learning	12	0 - 12	Very poor
		13 - 24	Teaching is viewed negatively
		25 - 36	A more positive perception
		37 - 48	Teaching highly thought of
Students' Perception of Faculty/Course Organizers	11	0 - 11	Abysmal
		12 - 22	In need of some retraining
		23 - 33	Moving in the right direction
		34 - 44	Model course organizers
Students' Academic Self Perception	8	0 - 8	Feelings of total failure
		9 - 16	Many negative aspects
		17 - 24	Feeling more on the positive side
		25 - 32	Confident
Students' Perception or Atmosphere	12	0 - 12	A terrible environment
		13 - 24	There are many issues that need changing
		25 - 36	A more positive attitude
		37 - 48	A good feeling overall
Students' Social Self Perception	7	0 - 7	Miserable
		8 - 14	Not a nice place
		15 - 21	Not too bad
		22 - 28	Very good socially
Overall	50	0 - 50	Very poor environment
		51 - 100	Plenty of problems in the environment
		101 - 150	More positive than negative environment
		151 - 200	Excellent environment

Table 2: Quantitative analysis of five subscales of the DREEM inventory with two different curricula (n=692)

	Year of data collection	Mean ± SD	Effect Size	Median (IQR)	p-value
Students' perception of learning	2015	30.09 ± 6.275	0.016	30 (34-27)	0.10
	2019	30.21 ± 8.131		32 (36-25)	
Student's perception of course organizers	2015	24.97 ± 5.442	0.326	25 (28-22)	<0.001*
	2019	26.92 ± 6.648		27 (31-24)	
Students' academic self-perception	2015	20.92 ± 4.864	0.214	21 (24-18)	0.04
	2019	19.77 ± 5.971		21 (24-17)	
Students' perception of atmosphere	2015	29.78 ± 6.301	0.388	31 (33-26)	<0.001*
	2019	26.76 ± 9.412		29 (32-21)	
Students' social self-perceptions	2015	17.35 ± 3.984	0.146	17 (20-15)	0.15
	2019	16.73 ± 4.537		17 (20-14)	
Total DREEM score	2015	123.10 ± 20.506	0.107	122 (134-111)	0.85
	2019	120.40 ± 30.500		126 (142-103)	

DREEM: Dundee Ready Education Environment Measure, IQR: Inter Quartile Range
Mann-Whitney U Test applied, *p-value ≤0.05

31 (33-26) and 29 (32-21) respectively. (Table 2)

The comparison of the two different curricula with categories of DREEM inventory score showed that a significant association of two curricula was observed with students' perception about learning (p-value <0.001), positive perception about course organizer (p-value <0.001), atmosphere (p-value <0.001), and academic self-perception (p-value 0.031). (Table 3)

Table 3: Association of five subscales of the DREEM inventory with two different curricula

	Year of data collection			
		2015 (n=398)	2019 (n=292)	
	Total	n (%)	n (%)	p-value
Students' perception of learning				
Very poor	9	3 (0.8)	6 (2.1)	<0.001*
Teaching is viewed neg	121	56 (14.1)	65 (22.3)	
Move positive perception	457	295 (74.1)	162 (55.5)	
Teaching highly thought of	103	44 (11.1)	59 (20.2)	
Students' perception of course organizers				
Abysmal	11	1 (0.3)	10 (3.4)	<0.001*
In need of some retraining	167	117 (29.4)	50 (17.1)	
Moving in right direction	459	263 (66.1)	196 (67.1)	
Model course organizers	53	17 (4.3)	36 (12.3)	
Students' perception of atmosphere				
A terrible environment	34	6 (1.5)	28 (9.6)	<0.001*
Many issues that need changing	122	61 (15.3)	61 (21.0)	
A more positive attitude	457	291 (72.8)	166 (57.0)	
A good feeling overall	78	42 (10.5)	36 (12.4)	
Students' academic self-perception				
Feelings of total failure	21	6 (1.5)	15 (5.1)	0.031*
Many negative aspects	122	66 (16.5)	56 (19.2)	
Feeling more on the positive side	408	244 (61.0)	164 (56.2)	
Confident	141	84 (21.0)	57 (19.5)	
Students' social self-perceptions				
Miserable	13	4 (1.0)	9 (3.1)	0.090
Not a nice place	158	84 (21.0)	74 (25.3)	
Not too bad	427	258 (64.5)	169 (57.9)	
Very good socially	94	54 (13.5)	40 (13.7)	

DREEM: Dundee Ready Education Environment Measure
All data presented as number (%), chi-square test applied, *p-value ≤0.05

DISCUSSION

This study aims to evaluate and appraise the educational environment of Wah Medical college through the lens of undergraduate students' experiences. The college being affiliated with two different universities at the same time, presented a unique opportunity to identify the strengths and weaknesses of the educational environment. This would be an initial step in formulating ways to improve the learning experience of the graduating students of the institute. Traditionally, the DREEM questionnaire has been used for evaluating the educational environment at a particular time as shown in various studies conducted in the UK, Sudan, Iran and Australia.[7,9-11] In Pakistan, a study conducted by Sarwar et al[12] demonstrated the relationship between academic performance and the educational environment. Another study conducted by Sattar et al[13] focused on final year students and measured their perceptions of their educational environment. Our study took a comparative approach, similar to studies conducted by Edgren et al[14] and Zawawi et al.[15]

The most important factor for the perception of learning environment, is the curriculum. Any change in it, trickles down to all elements of the educational environment. Curriculum changes also affect the behavior of all stake holders and thus it is very important to ensure involvement of all affected participants in the decision-making process. Before the change in university affiliation, Wah Medical College had been following a traditional undergraduate

medical curriculum with very little integration. However, the new curriculum demanded a sudden jump up the integration ladder from level 1 (Isolation) to level 5 (Temporal Coordination).[16] In temporal co-ordination, each subject remains responsible for its own teaching program. The teaching of topics within a subject, is coordinated with other disciplines and the timetable is adjusted so that topics within the subjects or disciplines which are related, are scheduled at the same time.[16-18] At Wah Medical College, the new university curriculum helped to achieve temporal integration and themes were developed by the Department of Medical Education for various modules within each block after consultation with designated faculty members. A lot of dedicated effort was required on part of the faculty to adapt to the new curricular changes and student representatives were also involved to make the transition smooth for all stake holders. The new curriculum was introduced gradually, and changes were made for each incoming class. The decision to evaluate the educational environment of the institute at this time was thus a very feasible idea to understand student perceptions and provide a source for decision making for further improvements in the curriculum.

The assessment of micro and macro climates of the medical institute was done by using DREEM inventory. The total DREEM scores were on the positive side in both 2015 and 2019 and indicated that the student's perception of learning environment was positive. These scores signified the student-centered approach being followed in the institution and students' participation in classes, relaxed atmosphere and confidence in passing the annual exams were the strengths of the institute. Measures need to be taken to create a positive impact on the students' achievement, satisfaction and success. The students' perception of learning increased from 2015 to 2019 depicting an overall improvement in the environment. This was a positive finding, depicting that the students had welcomed the change of affiliated university.

Two domains showed a statistically significant difference in scores, these included student's perception of atmosphere and student's perception of course organizers. This was representative of need of reforms to address the arising issues in the institution and informal discussions with the students led to the conclusion that the change in affiliation had created a feeling of uncertainty among the students as they were not used to this new system. This had resulted in the fear of unknown. Students tend to take guidance from their seniors and the role of the hidden curriculum also comes into play here. The hidden curriculum can be communicated through human behaviors as well as the structures and practices of institutions.[17,19] Students tend to adopt and transmit the behavior patterns and values they observe around them.[20] The senior students were a source of guidance and comfort for their juniors. The students at the same college who were now studying a different curricular format, were unable to seek their senior`s guidance as their seniors had not experienced the different teaching and assessment methodologies introduced by the new curriculum. They were thus confused and unsure of themselves. This resulted in a decrease in their perception of atmosphere. The hidden curriculum of the institute had changed, and the students were unable to comprehend the demands of this change and were stressed. The norms of the old method were not applicable in their new situation and the students were unsure of themselves.

The faculty had anticipated the difficulties in shifting to a new university and had put in extra effort and this is depicted as an increase in the student`s perception of course organizers after the change in affiliation. Faculty role was appreciated by their students and this had a positive effect on them. Thus, we can see that despite a significant difference in two domains of the educational environment, the total DREEM score was statistically insignificant. However, it shows a statistically significant association in all five subscales of DREEM inventory. It is thus postulated that it is the responsibility of the institutes to ensure that their students are happy and comfortable in the learning process at their institute and do the best they can in order to maintain this standard.

CONCLUSION

Comparison of student perceptions about the educational environment at two different points in time provided a clear picture of how students perceived the change in university affiliation. The results proved that the change in curriculum had not made a significant impact on the overall educational environment of Wah Medical College. This indicated that the institute was itself able to establish and maintain a healthy learning environment for its students where learning activities could foster and flourish adequately. The individual domains of the inventory showed a slight decline in the 2019 cohort of students, which showed that the change in curriculum did in fact effect student perceptions about the educational environment. Further research in this direction can help identify the causes for these

perceptions. However, it must be understood that each student has a different reaction to academic change. The institutional staff and faculty efforts resulted in students` accepting this change easily and their academic performance did not deteriorate very drastically. The fall in individual scores could be expected as different personalities react differently to the new circumstances but institutional assistance aided in the adjustment process resulting in improved perception of course organizers.

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ETHICAL APPROVAL: This study was approved by Institutional Review Board of the Wah Medical College, Wah Cantt Punjab, Pakistan.

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