

Comparing dental students' perceptions of their educational environment in Northwestern Saudi Arabia

Mohammad S. Ahmad, PhD, Ahmed Bhayat, BDS, MDent, Hani T. Fadel, PhD, Mohammad S. Mabrous, PhD.

ABSTRACT

الأهداف: مقارنة فهم وإدراك الطلاب على مدى فترة خمس سنوات للبيئة التعليمية والحياة الأكاديمية.

الطريقة: أجريت هذه الدراسة في جامعة طيبة، كلية الأسنان، المدينة المنورة وذلك خلال الفترة من 2009م إلى 2014م. ولقد تم الحصول على البيانات باستخدام مقياس دندي لبيئة التعليم الجاهز (DREEM)، والذي يتألف من خمسين عنصر تصنف إلى خمسة مجالات. واستُبعدت أربعة من هذه العناصر نظراً لعدم ارتباطها بعينة الدراسة. وشملت الدراسة جميع الطلاب المسجلين في عام 2009م، وقد تمت متابعتهم حتى عام 2014م. وتمت مقارنة إجاباتهم على المقياس الاستبائي باستخدام اختبار تي المزدوج.

النتائج: أنهى 34 طالباً الاستبيان في عام 2009م، ومنهم 30 شاركوا للمرة الثانية في عام 2014 (معدل الانسحاب من الدراسة 12%). وأشارت نتائج الدراسة إلى انخفاض المجال المتوسط والمجموع الكلي للدرجات مع مرور الوقت. وإنخفض متوسط الدرجات لستة عناصر بشكل ملحوظ إحصائياً، بينما ازداد أربعة منهم بشكل ملحوظ إحصائياً. وازداد أدني معدل درجات في عام 2009م بالنسبة لدعم الطلاب الذين يعانون من القلق وذلك بشكل ملحوظ في عام 2014 ($p=0.004$) بينما انخفض أعلى معدل درجات في عام 2009م فيما يخص الحياة الاجتماعية جيدة بشكل ملحوظ إحصائياً في عام 2014 ($p=0.007$) ، وهذا يمكن أن يكون مؤشراً على ارتفاع عبء العمل وتأثيرها على حياتهم الاجتماعية.

الخلاصة: أظهرت الدراسة بأن إدراك الطلبة قد كان منخفضاً نسبياً في البداية وظلت منخفضة طوال فترة الدراسة. ولم تكن هناك تغييرات كبيرة في المجال المتوسط ومجموع الدرجات، وبالرغم من تحسن بعض العناصر، إلى أن معظمها قد انخفضت خلال فترة الدراسة.

Objectives: To compare the perceptions of dental students over a 5-year period.

Methods: This cohort study was carried at Taibah University, College of Dentistry, Al-Madinah

Al-Munawwarah, Saudi Arabia between 2009 and 2014. Data was obtained using the Dundee Ready Education Environment Measure (DREEM), which consists of 50 items, 4 of these were irrelevant to this cohort and were excluded. All students registered in 2009 were included and followed up in 2014. Their responses were compared using the paired student's t-test.

Results: Thirty-four students completed the questionnaire in 2009, and 30 of them participated in 2014 (12% drop out rate). The mean domain and total scores decreased over time. The mean scores for 6 items decreased significantly, while 4 of them had a significant increase. The lowest mean score in 2009 regarding support for stressed students increased ($p=0.004$) in 2014. However, the highest mean score in 2009 related to having a good social life, reduced ($p=0.007$) in 2014. This could be an indication of the high workload and its impact on their social lives.

Conclusion: Student's perceptions were relatively low at the beginning, and remained low throughout the study. There were no significant changes in mean domain, and total scores and although scores of some items improved, most decreased over the study period.

*Saudi Med J 2015; Vol. 36 (4): 477-483
doi: 10.15537/smj.2015.4.10754*

From the Department of Preventive Dental Sciences (Ahmad, Fadel), and the Department of Medical Education (Mabrous), College of Dentistry, Taibah University, Al-Madinah Al-Munawwarah, Kingdom of Saudi Arabia, and the Department of Community Dentistry (Bhayat), School of Dentistry, University of Pretoria, Pretoria, South Africa.

Received 13th November 2014. Accepted 28th January 2015.

*Address correspondence and reprint request to: Dr. Mohammad S. Ahmad, Associate Professor in Dental Public Health, Department of Preventive Dental Sciences, College of Dentistry, Taibah University, Al-Madinah Al-Munawwarah, Kingdom of Saudi Arabia.
E-mail: msamiabmad@yahoo.com*

Students' perceptions, regarding medical teaching institutions, have often been used as an assessment tool to evaluate them.¹ These perceptions are based on many factors including social, economic, cultural, and past experiences.² Students who attend these educational institutions came from various backgrounds and cultures and as a result; their perceptions vary in their assessment of the institute. However, studies have shown a positive association between the students' perceptions, the educational environment, and the academic success of students.^{2,3} Tools have been developed to evaluate the perception of students and one of them, the Dundee Ready Education Environment Measure (DREEM) has proven to be valid and reliable.⁴⁻⁶ It has successfully been used in Malaysia,⁴ Saudi Arabia,^{5,6} and India,⁷ and translated into 8 languages including Arabic,⁶ Swedish,⁸ and Greek.⁹ A systematic review of studies using the DREEM, concluded that it is a useful tool in assessing the perceptions of students.¹⁰ It provides a quantifiable standardized tool for comparisons between teaching institutions, and is useful in identifying problematic areas that staff members may not be aware of.^{1,10} The Taibah University College of Dentistry (TUCoD) is located in Al-Madinah Al-Munawwarah, Saudi Arabia and was established in 2007. One of the goals of the TUCoD is to provide the best educational and environmental facility that would ensure students graduate with the highest standards. To achieve this, it is essential to monitor and evaluate the students' perceptions on a regular basis. This would alert staff to problem areas, and help rectify them. The first intake of dental students started their preparatory year in 2008 and the first group of dentists graduated in 2014. The dental degree offered at TUCoD, similar to other Saudi Arabian dental colleges, extends over 7 years; a preparatory year followed by 5 years of dental training, and one year of internship. This study included the first group of dental students and dental graduates. Although many studies have used the DREEM, most of them were cross-sectional in design.⁴⁻¹⁰ There were 2 prospective studies, and both were carried out over a one-year period.^{11,12} The current prospective cohort study followed the same group of dental students from their first and second year (2009) to their fifth and internship years (2014). It extended over 5-years, and

compared the perceptions of these students over time. The aims were to compare the student's perceptions of TUCoD from 2009-2014.

Methods. This was a cohort study comprising of first and second year dental students registered in 2009 at Taibah University, College of Dentistry (TUCoD), Al-Madinah Al-Munawwarah, Saudi Arabia. This cohort was followed up in 2014 and their responses were compared. All first and second year dental students who were registered in 2009 were asked to complete the questionnaire. In 2014, the same students, who were now in final and internship years, were invited to complete the questionnaire.

The DREEM was used to elicit the data. It consists of 50 items categorized into 5 domains with a maximum score of 200. Of these items, 4 were found to be irrelevant and were removed. These items related to the students' perceptions regarding clinical work and their residence in a hostel. In 2009, none of the students had started clinical work nor did they reside in a hostel; therefore, these were removed. The modified questionnaire was translated into Arabic, retranslated into English by another staff member and any changes in the translation were corrected. The final questionnaire consisted of each item in both English and Arabic languages. It consisted of 46 items with a maximum score of 184 as described by Mahrous et al.⁶ The questionnaire was tested for reliability in 2009, and the Cronbach's alpha coefficient was 0.905.⁶ The same modified version was used in 2014.

For each item, students were asked, using a Likert-type scale, to choose one of the following options; "strongly disagree," "disagree," "not sure," "agree" and "strongly agree." These options corresponded to scores of 0, 1, 2, 3, and 4. The domain scores were obtained by adding each item score within that domain. The scores for each domain were added to obtain the total DREEM score (Table 1). Lower scores represented dissatisfaction while

Table 1 - A breakdown of the domains, number of items and maximum scores.

Name of domain	No. of items	Maximum score
Students' perception of learning	12	48
Students' perception of teachers	10	40
Students' academic self-perception	8	32
Students' perception of atmosphere	11	44
Students' social self-perception	5	20
Total DREEM score	46	184

DREEM - Dundee Ready Educational Environment Measure

Disclosure. Authors have no conflict of interests, and the work was not supported or funded by any drug company.

higher scores represented a positive evaluation.

Ethical approval was obtained from the Dental Ethical Committee, Taibah University, Taibah, Saudi Arabia. The students were informed of the study objectives and those not willing to participate were excluded. Only males were included as there were no female students registered in 2009. All data was anonymous and confidential.

Data was entered then analyzed using the Statistical Package for the Social Sciences (SPSS Inc, Chicago, IL, USA) version 15. The same operator who entered the data in 2009, entered the data in 2014. The responses to 9 negative items were reverse coded in order to analyze the results appropriately.¹⁰ The mean item, domain, and total DREEM score was calculated and compared using the paired student's t-test.

Results. In 2009, 34 students completed the questionnaire (97% response rate) and in 2014, all 30 (100% response rate) completed the same questionnaire for a second time. There was a dropout rate of (12%) during the study. The mean students' perception of learning (SPL) score was lower in 2014, and 5 items had significant changes (Table 2). Three of the items had a significant decrease while 2 showed a significant increase. They felt that the teaching was less focused on the learning objectives, the time was not being used optimally and the teaching was not as student-centered, during the senior years as compared with the junior years. On a positive note, they believed that there was a change in the learning method, from teacher-centered to a more interactive learning style. The mean students' perception of teachers (SPT) scores showed a marginal reduction over time (Table 2). However, the mean score of 2 items deteriorated with one item showing a significant improvement. The students agreed that teachers gave them less feedback, and had become more irritated by them over the 5-year period. However, they reported that teachers were more prepared for their classes than before. The mean score for the students' academic self-perception (SAP) domain showed a slight reduction from 2009 to 2014 (Table 2). However, none of the items showed any significant changes. The students' perception of the university atmosphere (SPA) remained almost the same (Table 2), with none of the items showing any significant changes in their mean scores. The students felt that there was less cheating in 2014 compared with 2009. The mean students' social self-perception (SSP) score reduced marginally with 2 items showing a significant change (Table 2); they

thought that their social life had deteriorated over time and that there were more systems in place to help them cope with the stresses related to studying dentistry than in the past. Although the mean domain and total mean scores were lower in 2014 compared with 2009, none of them exhibited any significant differences (Figure 1). The total mean DREEM score reduced from 92.29 (± 21.94) to 88.40 (± 20.53) and was not statistically significant ($p=0.468$).

Discussion. The strength of this study, being a cohort, allowed for comparisons over a 5-year period. Although the mean scores did not change much, it allowed for a detailed analysis of possible problems and successes. It highlighted problem areas that had improved and new problem areas that were possibly undetected. It also provided feedback from interventions that were put in place to address concerns raised in 2009. In 2009, one student did not complete the questionnaire and therefore the response rate was 97%. There was a course dropout rate of 12% and these students had most likely left the course or had failed and hence were excluded. The follow-up rate of 88% was more than the required 60-80%, which is considered adequate to ensure minimal bias in the results.¹³ The results from the current study could not be directly compared to other studies as none of the previous studies used a cohort study design. Almost all other studies using the DREEM questionnaire were cross-sectional in nature, and provided a once off snapshot of the student's perceptions. This study however, followed the same group and compared their results over a 5-year period. The aim was to evaluate how the environment had changed and how the students' perceptions of the environment had changed over the study period.

The mean overall DREEM score remained almost the same over the study period. This showed that although there were some changes in the students' perceptions regarding specific issues, their overall impression did not change much over the 5 years. The reduced mean score obtained from the senior cohort, confirms the results of other studies, which reported that senior students had lower mean scores compared with junior students.¹⁴ This could be due to the possibility, that as junior students, they were excited and anxious on entering a tertiary institute and had high expectations. However, for most of them, this was their first exposure to a tertiary institute and they were unable to compare this institute to others. As they became more senior, they may have had opportunities to visit other dental

Table 2 - Comparison of the mean students' scores for each domain (N=64).

Items	2009 (n=34)	2014 (n=30)	P-value
	Mean \pm SD		
<i>Dental students' perception of learning scores</i>			
1. I am encouraged to participate in the class	1.44 \pm 1.02	1.20 \pm 0.89	0.320
2. The teaching is often stimulating	1.29 \pm 0.94	1.13 \pm 0.86	0.480
3. The teaching is student-centered	2.50 \pm 1.05	1.43 \pm 0.90	0.000*
4. The teaching helps to develop my competence	1.88 \pm 1.01	1.77 \pm 0.82	0.619
5. The teaching is well focused	1.85 \pm 0.93	1.20 \pm 0.71	0.003*
6. The teaching helps to develop my confidence	1.47 \pm 1.16	1.60 \pm 0.93	0.628
7. The teaching time is put to good use	2.15 \pm 0.93	1.27 \pm 0.94	0.000*
8. The teaching over-emphasizes factual learning	2.26 \pm 0.99	2.10 \pm 1.03	0.518
9. I am clear about learning objectives of the course	2.24 \pm 1.02	2.33 \pm 0.76	0.667
10. Teaching encourages me to be an active learner	1.21 \pm 0.85	1.80 \pm 1.03	0.014*
11. Long term learning is emphasized over short term	2.06 \pm 1.00	1.53 \pm 1.04	0.050
12. The teaching is too teacher-centered†	1.26 \pm 1.31	2.07 \pm 1.11	0.011*
Total mean score	21.62 \pm 5.82	19.43 \pm 6.27	0.153
<i>Dental students' perception of teachers scores</i>			
1. The teachers are knowledgeable	2.41 \pm 1.08	2.60 \pm 1.07	0.486
2. The teachers ridicule the students†	2.29 \pm 1.27	2.23 \pm 1.14	0.841
3. The teachers are authoritarian†	1.94 \pm 1.21	2.07 \pm 0.94	0.648
4. The teachers have good communication skills	2.00 \pm 1.04	2.33 \pm 0.99	0.197
5. The teachers provide good student feedback	2.21 \pm 1.07	1.63 \pm 0.81	0.020*
6. The teachers provide constructive criticism	2.06 \pm 1.07	1.70 \pm 1.18	0.207
7. The teachers give clear example	2.09 \pm 1.14	2.23 \pm 0.94	0.582
8. The teachers get angry in the class†	1.97 \pm 1.03	2.03 \pm 1.25	0.826
9. The teachers are well prepared for their class	1.59 \pm 1.02	2.33 \pm 1.18	0.009*
10. The students irritate the teachers†	2.71 \pm 1.14	1.87 \pm 0.94	0.002*
Total mean score	21.26 \pm 6.55	21.03 \pm 5.28	0.878
<i>Dental students' academic self-perception scores</i>			
1. Learning strategies which worked before work now	1.82 \pm 1.17	1.80 \pm 1.03	0.933
2. I am confident about my passing this year	2.53 \pm 1.29	2.37 \pm 1.13	0.595
3. I feel I am being well prepared for my profession	2.18 \pm 0.94	2.10 \pm 0.89	0.739
4. Last year's work has been good preparation for this year	1.94 \pm 1.50	1.87 \pm 0.94	0.815
5. I am able to memorize all I need	1.56 \pm 1.05	1.87 \pm 0.90	0.216
6. I have learned a lot about empathy in my profession	2.82 \pm 0.97	2.37 \pm 0.10	0.068
7. My problem solving skills are being well developed	2.53 \pm 1.08	2.33 \pm 0.76	0.410
8. Much of what I learn seems relevant to dentistry	2.35 \pm 0.98	2.17 \pm 0.75	0.401
Total mean score	17.74 \pm 5.59	16.87 \pm 5.48	0.533
<i>Dental students' perception of the atmosphere scores</i>			
1. The atmosphere is relaxed during the lectures	1.94 \pm 1.07	1.87 \pm 0.68	0.745
2. This college is well time-tabled	1.56 \pm 1.21	1.40 \pm 1.00	0.573
3. Cheating is a problem in this college†	2.47 \pm 1.19	2.53 \pm 1.41	0.847
4. There are opportunities to develop inter-personal skills	1.76 \pm 0.92	2.13 \pm 1.01	0.132
5. I feel comfortable in class socially	2.06 \pm 1.04	2.03 \pm 0.81	0.914
6. Atmosphere is relaxed during seminars/tutorials	1.91 \pm 0.79	2.07 \pm 1.14	0.527
7. I find the experience disappointing†	2.35 \pm 1.43	1.87 \pm 1.14	0.141
8. I am able to concentrate well	2.29 \pm 1.14	2.17 \pm 1.05	0.646
9. The enjoyment outweighs stress of studying dentistry	1.29 \pm 1.32	1.40 \pm 1.10	0.730
10. The atmosphere motivates me as a learner	1.32 \pm 0.88	1.77 \pm 1.01	0.065
11. I feel able to ask the questions I want	2.56 \pm 1.02	2.07 \pm 1.29	0.093
Total mean score	21.53 \pm 6.19	21.30 \pm 5.84	0.880
<i>Dental students' social self-perception scores</i>			
1. There is good support for students who get stressed	0.76 \pm 0.86	1.57 \pm 1.25	0.004*
2. I am too tired to enjoy this course†	1.38 \pm 1.44	1.70 \pm 1.40	0.374
3. I am really bored on this course†	1.79 \pm 1.12	1.40 \pm 1.04	0.151
4. I have good friends in this college	3.06 \pm 1.05	2.67 \pm 1.12	0.153
5. My social life is good	3.15 \pm 0.78	2.43 \pm 1.22	0.007*
Total mean score	10.15 \pm 2.40	9.77 \pm 3.00	0.576

*Significant using paired students t-test, †Reverse coded for purposes of analyses

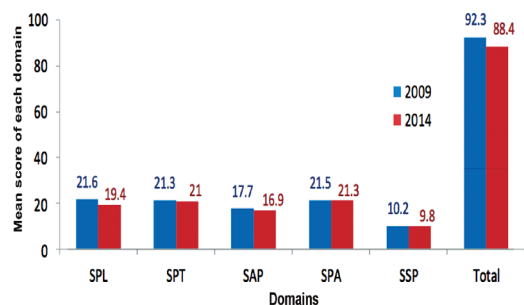


Figure 1 - Comparison of the mean domain and total Dundee Ready Education Environment Measure scores (N=64). SPL - students' perception of learning, SPT - students' perception of teachers, SAP - students' academic self-perception, SPA - students' perception of atmosphere, SSP - students' social self-perception.

schools, meet dental students, and attend dental conferences. This exposure to different institutions and their students could have made them more critical of their own learning institute.

Another reason could be that as junior students, they were apprehensive or not confident enough, to express their true feelings regarding the institute. As a result, they could have exaggerated their responses and given a false impression regarding the institute. As they became more senior, they grew in confidence and realized that they would not be victimized for their views and could have therefore been more critical of the environment.

The lack of a significant improvement in the students' perception at TUCoD is perturbing. It must be noted that TUCoD is still a relatively new dental college and with time, most of these issues would be addressed. The curriculum underwent changes over the past 5 years and teachers had to modify their learning objectives, assessment methods, and teaching styles. This could have created confusion and duplication of some aspects in their teaching and resulted in dissatisfaction amongst the students. Another frustration was the lack of patients, equipment, and materials. The community was initially unaware of the dental clinic and the services it offered. In addition, certain equipment, and materials had not arrived on time and as a result. The first 6-10 months were stressful for staff and students alike. Students were unable to meet their clinical quotas for that period. However, as more people became aware of the dental clinic, the patient attendance increased, the delivery of equipment and materials also improved and as a result, students managed to reach their clinical quota. This stressful period may have resulted in the

lower scores that were obtained for items related to their social life, time tabling of the college, stress related to studying dentistry, and so forth. Most of the other studies that yielded relatively higher scores were carried out at established medical and dental colleges where students were unlikely to face these challenges.^{2,4,10,11}

Students' perception of learning. The students noticed a shift from a teacher-centered style to a more interactive learning style. This highlighted how the teaching strategies possibly changed from a didactic style to an interactive style, which included small group discussions and assignments. This was a positive sign as most dental and medical colleges are actively trying to modify their didactic teaching to a student interactive teaching style.¹⁵ Students were of the opinion that in the clinical years of study, the teaching was not as student-centered as the non-clinical years. This could be as a result of them starting to treat patients and the focus of the teaching was on the patient and the community rather than the student.

The students also thought that the lectures became less focused, and that the teaching time was more under utilized in 2014 compared with 2009. This meant that the learning objectives (LOs) were not always discussed or that there were no clear LOs in the senior years compared with the junior years. It must be noted that in the past 2 years, staff at TUCoD were obliged to submit a list of all the lectures together with the LOs for each lecture. This would help by ensuring that teachers are aware of what to teach during each lecture. One of the repercussions of not having clear LOs, or of not following the LOs is that the lecture will not be focused. This could also result in poor utilization of the allocated time as reported by the students. The teachers must ensure that the LOs are clear and that student's address all of them.

Students' perception of teachers. The students' attitudes regarding teachers should have improved as the number of staff increased during the study period. A number of highly qualified international staff members were recruited, and this should have improved the quality of teachers and teaching at TUCoD. Perhaps the reason for their dissatisfaction was due to the diverse teaching staff that was employed. Staff members from different countries probably had their own unique teaching and assessment style, which could have confused the students. It is therefore, essential to orientate all staff members on the prescribed teaching and assessment styles employed at TUCoD. It is also vital to continuously monitor and evaluate the teaching

staff to ensure that they meet the teaching requirements and that they implement appropriate and approved innovative teaching methods.

Three statements yielded significant reductions in their scores between 2009 and 2014. Students felt that teachers in 2014 provided insufficient feedback and that they were not adequately prepared for their class. This was similar to many other studies and it seems that all students perceive that they do not receive adequate feedback.¹⁰ In addition, students in 2014 felt that teachers were more irritated by them compared with 2009. These perceptions need further investigation to identify the means of improving these issues.

Students' academic self-perception. There were no significant differences in any of the items over the study period. One score that did improve: "I am able to memorize all I need" indicated that students had possibly identified new methods to memorize and cope with the increased workload. During the early years, the volume of work may have seemed insurmountable, but as the students matured, they changed their learning strategies and were able to memorize the necessary information. Similar to other studies, there was a reduction in the mean score for the item "I have learned a lot about empathy in my profession".^{16,17} The lack of empathy in senior students could be related to them being exposed to patient related problems such as failed appointments, patients arriving late for appointments, and trying to cope with their clinical quotas. Some researchers have suggested the continuation of lectures on communication skills and ethical values throughout the dental course as this has shown to improve students' empathy.¹⁶

Students' perception of atmosphere. There were no significant changes in any of the mean scores. There was an improvement in the scores of "The enjoyment outweighs stress of studying dentistry", "The atmosphere motivates me as a learner" and "The atmosphere is relaxed during seminars/tutorials". This showed that student perceptions regarding the studying of dentistry and their motivation had improved over the study period. However, there was a reduction in the mean score for "I feel able to ask the questions I want". This indicated that students were either not confident or intimidated to ask questions. This could be related to the low score obtained for the item regarding teachers being irritated by students. Students may have believed that teachers became irritated with them if they asked questions; hence, they refrained from asking questions. This needs further investigation and must be dealt with urgency to

ensure a healthy learning environment. On a positive note, students reported that cheating had decreased. This could be due to various mechanisms that were put in place in the last few years. These included using multiple examination venues, increasing the number of invigilators, and initiating and implementing strict examination rules as set out by TUCoD.

Students' social self-perception. There was a significant increase in the mean score of the item; "There is good support for students who get stressed". This indicated that students were aware of effective systems that had been put in place to deal with their stress related issues. Further studies are required to determine the utilization rates, and the types of problems that these services are rendering in order to address the common stress related causes. Students felt that their social life had deteriorated over the study period. This could be due to the increase in the clinical and theoretical workload, which consumed more of their time and impacted negatively on their social lives as discussed by other authors.¹⁴

Total mean DREEM and domain scores. The total DREEM score decreased in 2014 due to reductions in each of the domains. Ideally, the domain scores should have increased and this would have indicated that the volume of problems had reduced or had been adequately dealt with. However, students identified these possible problems at a time when they were younger and unexposed to the clinical environment. There were 2 types of factors that could have been responsible for the decrease in the mean scores; external and internal factors. The external factors include an increased workload, poor patient attendance, a shortage of dental materials, changes in the curriculum (including teaching and assessment), and changes in the staff compliment.

Internal factors include interactions with dental students, visiting other dental colleges, and being exposed to different curriculums and teaching styles through social networks, media and conferences. The internal factors could have impacted the students on a personal level and changed their attitudes and beliefs as they matured.

Other studies also showed that senior students had lower perceptions of their institutions compared with juniors.^{14,18-20} None of these determined the reasons for this lower perception as they were cross-sectional in design, and the DREEM does not allow for detailed questions or open-ended options. The current study showed that students having completed their studies have lower perceptions of their institution compared

with junior students who are just beginning. The reason for this is a combination of the internal and external factors that combine and impact on the perceptions, attitudes, and beliefs of the individual. Since this study used a modified version of the DREEM, it was not possible to directly compare the results to other studies. However, these results follow the general trend reported in most other DREEM studies in which older students were more dissatisfied than their younger colleagues.¹⁸⁻²⁰

In conclusion, student's perceptions of the college were relatively low, and remained low throughout the duration of their study. There were no significant changes in the domain, and total scores and although the mean scores of a few items improved, most of them decreased over the study period. As these students matured, they tended to have lower perceptions regarding the educational environment. This could mean that either their problems were not adequately addressed or that their expectations changed as a result of internal and external factors.

Recommendations. All existing and future staff members should be orientated on the prescribed teaching styles adopted at TUCoD. This orientation should include the importance of providing continuous feedback and constructive criticism to students. It should also focus on the importance of having clear LOs for each lecture and ensuring that each LO is taught. This could reduce the time needed for presenting lectures and allow more time for discussions and clarifications. It would ensure that the teaching time is being optimally utilized. Students should also be allowed to raise their concerns on a regular basis through questionnaires or discussions in order to detect and rectify any problems that could arise. It is recommended to carry out a similar study amongst both males and females on a regular basis to gauge any changes in their perceptions.

References

- Hammond SM, O'Rourke M, Kelly M, Bennett D, O'Flynn S. A psychometric appraisal of the DREEM. *BMC Med Educ* 2012; 12: 2.
- Mayya S, Roff S. Students' perceptions of educational environment: a comparison of academic achievers and under-achievers at Kasturba Medical College, India. *Educ Health* 2004; 17: 280-291.
- Lizzio A, Wilson K, Simons R. University students' perceptions of the learning environment and academic outcomes; implications for theory and practice. *Studies in Higher Education* 2002; 27: 27-52.
- Al-Naggar RA, Abdulghani M, Osman MT, Al-Kubaisy W, Daher AM, Nor Aripin KN et al. The Malaysia DREEM: perceptions of medical students about the learning environment in a medical school in Malaysia. *Adv Med Educ Pract* 2014; 5: 177-184.
- Al-Kabbaa, AF, Ahmad HH, Saeed AA, Abdalla AM, Mustafa AA. Perception of the learning environment by students in a new medical school in Saudi Arabia: Areas of concern. *J Taibah Uni Med Sc* 2012; 7: 69-75.
- Mahrous M, Al-Shorman H, Ahmad MS. Assessment of the educational environment in a newly established dental college. *J Educ Ethics Dent* 2013; 3: 6-13.
- Kohli V, Dhaliwal U. Medical students' perception of the educational environment in a medical college in India: a cross sectional study using the DREEM questionnaire. *J Educ Eval Health Prof* 2013; 10: 5.
- Jakobsson U, Danielsen N, Edgren G. Psychometric evaluation of the Dundee ready educational environment measure: Swedish version. *Med Teach* 2011; 33: 267-274.
- Dimoliatis ID, Vasilaki E, Anastassopoulos P, Ioannidis JP, Roff S. Validation of the Greek translation of the Dundee Ready Education Environment Measure (DREEM). *Educ Health (Abingdon)* 2010; 23: 348.
- Miles S, Swift L, Leinster SJ. The Dundee Ready Education Environment Measure (DREEM): a review of the adoption and use. *Med Teach* 2012; 34: e620-e634.
- Yusoff MSB. Stability of DREEM in a sample of medical students: A prospective study. *Education Research International* 2012; 509638: 1-5.
- Miles S, Leinster SJ. Medical students' perceptions of their educational environment: expected versus actual perceptions. *Med Educ* 2007; 41: 265-272.
- Kristman V, Manno M, Côté P. Loss to follow-up in cohort studies: how much is too much? *Eur J Epidemiol* 2004; 19: 751-760.
- Demiroren M, Palaoglu O, Kemahli S, Ozyurda F, Ayhan IH. Perceptions of students in different phases of medical education of educational environment: Ankara University Faculty of Medicine. *Med Educ Online* 2008; 13: 8.
- Costa ML, van Rensburg L, Rushton N. Does teaching style matter? A randomised trial of group discussion versus lectures in orthopaedic undergraduate teaching. *Med Educ* 2007; 41: 214-217.
- Sherman JJ, Cramer A. Measurement of changes in empathy during dental school. *J Dent Educ* 2005; 69: 338-345.
- Hojat M, Mangione S, Nasca TJ, Rattner S, Erdmann JB, Gonnella JS, et al. An empirical study of decline in empathy in medical school. *Med Educ* 2004; 38: 934-944.
- Thomas BS, Abraham RR, Alexander M, Ramnarayan K. Students' perceptions regarding educational environment in an Indian dental school. *Med Teach* 2009; 31: e185-e186.
- Abraham R, Ramnarayan K, Vinod P, Torke S. Students' perceptions of learning environment in an Indian medical school. *BMC Med Educ* 2008; 8: 20-26.
- Avalos G, Freeman C, Dunne F. Determining the quality of the medical educational environment at an Irish medical school using the DREEM inventory. *Ir Med J* 2007; 100: 522-525.