

Evaluation of a Brazilian Postgraduate Dental Program by the Dundee Ready Educational Environment Measure

Rebeca do Vale Placa¹, Mariana S. Raghianti Zangrando¹, Adriana C. P. Sant'Ana¹, Sebastião L. A. Gregghi¹,
Maria Lucia R. de Rezende¹ & Carla A. Damante¹

¹ Department of Prosthodontics, Discipline of Periodontology, Bauru Dental School, University of São Paulo, Brazil

Correspondence: Mariana S. Raghianti Zangrando, Bauru School of Dentistry, University of São Paulo. Address: Alameda Octavio Pinheiro Brisolla 9-75 Code: 17012-901 Bauru-SP, Brazil. Tel: 55-14-3235-8577. E-mail: mariana@fob.usp.br

Received: April 17, 2015 Accepted: June 5, 2015 Online Published: October 27, 2015

doi:10.5539/ies.v8n11p34

URL: <http://dx.doi.org/10.5539/ies.v8n11p34>

Abstract

The evaluation of education environment is essential to provide to the professors a better understanding of the teaching process. One valuable tool for this assessment is the Dundee Ready Educational Environment Measure (DREEM). This questionnaire has 50 questions and is divided in five dimensions: D1–Perceptions of teaching, D2–Perceptions of teacher, D3–Academic self-perceptions, D4–Perception of atmosphere, D5–Social self-perception. Although it was first elaborated to undergraduate medical students, it has been used to other health areas. The aim of this study was to evaluate learning environment of a dental postgraduate course in a Brazilian University. Twenty-one students of master degree and PhD program in Periodontics were invited to answer the DREEM questionnaire. The mean age of the students was 27.4 years old. The total DREEM mean was 146.8, presenting a positive learning environment. Possible correlations were analyzed by Spearman's correlation test ($P < 0.05$). There was a positive correlation between total DREEM and all 5 dimensions ($p < 0.05$). The highest correlation was total DREEM with academic self-perceptions ($r = 0.938$). There was no correlation between age and distance from parents home ($p > 0.05$). In conclusion, the postgraduate learning environment is positive and students are satisfied. This questionnaire was very efficient and provided important information to maintain or improve our learning environment.

Keywords: educational measurement, periodontology, questionnaires, teaching

1. Introduction

The perception of students considering their educational environment is a useful source to modify or improve quality of education. Whereas education is a dynamic process, researches about this topic are important to improve education methods and strategies. Equally essential is to know opinion of the students about teachers and educational environment.

The Dundee Ready Education Environment Measure (DREEM) was developed by Roff et al. (1997) with the aim of developing and validating a universal diagnostic inventory for assessing the educational environment of health professions/medical schools (Roff et al., 1997). The authors presented a questionnaire with 50 questions divided in five subscales: Students' perceptions of Learning, Students' perceptions of teachers, Students' academic self-perception, Students' perceptions of atmosphere and Students' social self-perceptions. Nine questions are negative with a symmetric score. A total score of 200 is obtained and the interpretation of results is based on a guide by McAleer and Roff (2001).

Although DREEM is usually applied to undergraduate students, there are some comments in literature about implementation for evaluating postgraduation programs (Jeyashree & Patro, 2013). Based on statistics used in previous studies (Roff et al., 1997, de Oliveira Filho et al., 2005) DREEM is a powerful tool for evaluating students and residents' perceptions of their learning atmosphere. Khan, Akturk, and Al-Megbil (2010) applied DREEM for 13 trainees of a postgraduate program in family medicine. The results presented an overall high score and positive attitude towards the course.

The DREEM is known worldwide, but there are a few Brazilian studies conducted only with medical students

(Vieira, Nunes, & Martins, 2003; de Oliveira Filho, Vieira, & Schonhorst, 2005; de Oliveira Filho, & Schonhorst, 2005; Sobral, 2004). The dental postgraduate program in Periodontics of Bauru School of Dentistry is a two-year master and three-year doctoral program. It includes general disciplines as statistics, laboratory and animal research, teaching practice, and specific disciplines of Periodontics based on seminars presented by the students and clinical practice. Students must elaborate a scientific research and present a thesis to obtain their diploma. The quality of the specific disciplines of Periodontics was never evaluated, thus DREEM is a valuable tool to provide a feedback from students. Furthermore, this questionnaire is useful for achieve important data to maintain or improve our learning environment.

As far as we know, this is the first study to apply DREEM questionnaire to postgraduate dental students. The aim of this study was to evaluate the learning environment of a postgraduate program in dental surgery (Periodontics) by means of DREEM questionnaire.

2. Material and Methods

Twenty-one students (14 women, 7 men) from Master and PhD program in Periodontics at Bauru School of Dentistry were invited to answer the questionnaire. The postgraduate program in Periodontics is accomplished in one of the most important public universities in Brazil. The learning environment includes scientific researches, theoretical classes/ seminars and practical patient care with focus on periodontal surgery. Master degree program takes 2 to 3 years and doctoral program 3 to 4 years. To receive master or doctoral degree, students must develop a research and present a written thesis to a board.

This study was approved by the Ethical Committee in Human Research (CAAE 09136812.5.0000.5417) from Bauru School of Dentistry (University of Sao Paulo). The questionnaire was divided in two parts. The first part had a demographic survey including questions about age, gender and distance from parents' home. The second part had 50 questions of DREEM. DREEM is a 50-statement, closed-question questionnaire scored on a Likert scale ranging from 0 to 4 with a maximum total DREEM score of 200. All answers were analyzed and scored according to McAleer and Roff (2001).

The five dimensions were scored as follows: D1–Students' perceptions of Learning–12 items with a maximum score of 48. D2–Students' perceptions of teachers–11 items with a maximum score of 44. D3–Students' academic self-perception–8 items with a maximum score of 32. D4–Students' perceptions of atmosphere–12 items with a maximum score of 48. Students' social self-perceptions–7 items with a maximum score of 28. Data was presented in descriptive analysis and possible correlations were analyzed by Spearman's correlation test at a significance level of 5% ($p < 0.05$).

3. Results

Demographic data of the sample is described at Figure 1. Total DREEM score was 146.81 demonstrating a more positive than negative environment (Table 2). The mean score of the 5 dimensions and their interpretation is shown in Table 2. The greatest outcome was reached on the perception of teachers, where 82% of the students considered teachers as model course organizers. The poorest outcome was at the social self-perceptions where 55% of the students considered the social environment as “not a nice place”.

Gender	Male	7
	Female	14
Level	Master's student	16
	Doctoral student	5
Age	Mean age	27.4

Figure 1. Demographic data of a total number of 21 students

Table 1. Total DREEM score, including five dimensions and analysis of the results. Mean \pm standard deviation

DREEM dimension	Interpretation
D1 – Learning 34.95 \pm 5.13	36% -Teaching highly thought of 64% - A more positive perception
D2 – Teachers 36.19 \pm 4.68	82% - Model course organizers 18% - Moving in the right direction
D3 – Academic self-perceptions 23.24 \pm 4.48	64% - Confident 27% - Feeling more on the positive side 9% - Many negative aspects
D4 – Atmosphere 33.24 \pm 5.51	27% - A good feeling overall 64% - A more positive attitude 9% - There are many issues that need changing
D5 – Social self-perceptions 19.19 \pm 4.13	27% - Not too bad 55% - Not a nice place
Total DREEM 146.81 \pm 18.6	A more positive than negative education environment

The 10 best and worst scored questions were described in Table 2. At DREEM, nine questions are negative, which means that the opposite interpretation is a positive answer. One example is the number one best scored question: “I find the experience disappointing”. The high score achieved means that many of the students strongly disagree with the information. The first and second worst scored questions (No support for stress and cheating) were considered the weakest points of the education environment.

Table 2. Top 10 best and worst scored questions

Best scored	Worst scored
1 I find the experience disappointing (negative question)	There is a good support system for students who get stressed
2 The teachers have good communications skills with patients	Cheating is a problem in this school (negative question)
3 The teachers are well prepared for their classes	The teaching over-emphasizes factual learning (negative question)
4 The teachers are knowledgeable	I am rarely bored on this course
5 I have good friends in this school	The teaching is often stimulating
6 My social life is good	Long-term learning is emphasized over short term
7 My accommodation is pleasant	There are opportunities for me to develop interpersonal skills
8 The teachers are patient with patients	I am able to memorize all I need
9 The teachers ridicule the students (negative question)	The students irritate the teachers (negative question)
10 I am encouraged to participate in class	I am too tired to enjoy this course (negative question)

Positive correlations were found in the study. The highest positive correlation was between total DREEM score and perception of learning ($r=0.8531$) followed by perception of atmosphere ($r=0.8318$), academic self-perceptions ($r=0.8158$), perception of teachers ($r=0.6682$) and social self-perceptions ($r=0.7082$). There was no correlation between total DREEM and age or distance from parents home ($p>0.05$). In relation to distance from parents home: 3 students marked 0 Km, 3 students < 20km, 3 students–50 to 100 Km, 3 students–100-200 Km, 5 students >300 Km, 4 students marked–exterior.

4. Discussion

The main objective of the present study was to describe a useful tool to access quality of our postgraduate program in Periodontics. We consider DREEM questionnaire suitable for our needs once this instrument provides perception of the students related to educational environment. Thus, this method was already employed

in postgraduate programs of Medicine and other areas (Jeyashree & Patro, 2013).

This is the first study to apply DREEM questionnaire to postgraduate dental students. Results were optimistic demonstrating more positive aspects than negative about education environment (Total DREEM score = 146.81). This positive outcome was encountered also by other authors that used questionnaire for undergraduate dental students in various countries as India (Thomas, Abraham, Alexander, & Ramnarayan, 2009), Germany (Ostapczuk, Hugger, de Bruin, Ritz-Timme, & Rotthoff, 2012), Greece (Kossioni, Varela, Ekonomu, Lyrakos, & Dimoliatis, 2012), New Zealand (Foster, Kang, Anderson, & Thomson, 2012; Foster et al., 2013), Pakistan (Ali, Raja, Watson, Coombes, & Heffernan, 2012), United Kingdom (Ali et al., 2012) and Spain (Tomás et al., 2013).

Undergraduate and graduate students have different perceptions about the role of professors in their education. This characteristic is explained by the Stritter's learning vector theory, which states that students' learning progress depends on collaboration of teachers with them, until they reach independence from their teachers while pursuing their learning objectives (Ullian, Bland, & Simpson, 1994; Paukert & Richards, 2000). In medical schools, undergraduate students give higher scores for professors than residents, who are more independent. In contrast, present study showed a high score for perception of teachers. Probably, this result occurred because in a postgraduate course, students are learning "how to be a professor". Although they are more independent on their profession (e.g. Dentistry), they are very dependent on the professors to learn how to teach.

Although it could be inferred that age could have a positive influence in the results of the study, this was not found. The results are in accordance with a study made with undergraduate students in United Kingdom (Foster, Kang, Anderson, Thomson, Meldrum, & Moffat, 2013).

The worst scored question was about the absence of support for students who get stressed. Interestingly, this problem also was mentioned in other studies conducted in India (Thomas, Abraham, Alexander, & Ramnarayan, 2009), Germany (Ostapczuk, Hugger, de Bruin, Ritz-Timme, & Rotthoff, 2012), Greece (Kossioni, Varela, Ekonomu, Lyrakos, & Dimoliatis, 2012) and New Zealand (Foster, Kang, Anderson, & Thomson, 2012). In contrast, the study by Ali et al. (2012) described no interference of this item. Because in their university, there are regular half hour one-to-one meetings are carried out at six-weekly intervals to monitor students' progress on the course and provide academic support (Ali et al., 2012). Also a Pastoral support is available to students who get stressed (Ali et al., 2012).

The second worst scored question in the present study was related to cheating. Only one study conducted in Pakistan made some considerations about this topic (Ali, Raja, Watson, Coombes, & Heffernan, 2012). Authors stated that cheating by students in higher education is universally recognized. Unfortunately is not possible to ascertain precisely the nature, incidence, causes, and seriousness of cheating from DREEM data alone (Ali, Raja, Watson, Coombes, & Heffernan, 2012). We may suggest that cheating can be also related to cultural issues and more studies about this specific topic should be done.

Considering the best scored questions, the first one was about the overall experience. The choice of a postgraduate program is personal and based in the area of Dentistry of which the student has more affinity. Six students were former undergraduate students from the same university; three came from other states in Brazil and two from other Latin America countries. University of São Paulo is one of the best universities of Brazil and Latin America, so the satisfying experience of learning was expected.

There is one study in Saudi Arabia conducted in a postgraduate course for a diploma program for family medicine (Khan, Akturk, & Al-Megbil, 2010). The total DREEM was 118.5 which demonstrated a more positive than negative education environment, similar to the present research. Other similar result was that the perception of teachers was better than the other dimensions. But the major difference was that only 20% of the students scored the teachers as model course organizers while in the present study 82% of the students gave this score. The Saudi Arabia study is based in a 14-month's program covering all aspects of family medicine (Khan, Akturk, & Al-Megbil, 2010), while in the present research, the main goal of this Brazilian postgraduate Master and PhD course is to prepare the students to be teachers and researchers. In fact the 2nd to 4th best scored questions were about perceptions of teachers. It is comprehensible, because, once the student is prepared to be a professor, their professors use to be good models and target of admiration.

The results of this study were very promising and positive. The professors tried to discuss how to deal with the worst scored questions (stress and cheating). Unfortunately, the university does not have a psychological support for students. Therefore, the professors are always alert to detect possible psychological problems and advise students to seek for a professional. Also, they try to do constant positive reinforcement for the students' work and friendly discuss the negative aspects. In relation to cheating, the students were referring more to cheating in exams by undergraduate students than other forms of cheating. Yet, the ethics and moral aspects of research,

publishing papers and personal relationship are always discussed with the students.

The results from DREEM questionnaire were convenient and reliable, even with small sample size, considering that the answers were uniform. Moreover, as an option of assessment of our program, this questionnaire was very efficient and provided important information to maintain or improve our learning environment. Within the limits of this research, it is possible to suggest that DREEM was a convenient tool to measure the educational environment in a postgraduate program in dental school and more studies are encouraged.

5. Conclusion

The learning environment of the Brazilian postgraduate dental program in Periodontics is positive with a good perception of teachers by the students. This questionnaire was very efficient and provided important information to maintain or improve our learning environment.

References

- Ali, K., McHarg, J., Kay, E., Moles, D., Tredwin, C., Coombes, L., & Heffernan, E. (2012). Academic environment in a newly established dental school with an enquiry-based curriculum: perceptions of students from the inaugural cohorts. *European Journal of Dental Education*, *16*, 102-109. <http://dx.doi.org/10.1111/j.1600-0579.2011.00728>
- Ali, K., Raja, M., Watson, G., Coombes, L., & Heffernan, M. (2012). The dental school learning milieu: students' perceptions at five academic dental institutions in Pakistan. *European Journal of Dental Education*, *16*, 487-494.
- De Oliveira Filho, G. R., & Schonhorst, L. (2005). Problem-based learning implementation in an intensive course of anaesthesiology: A preliminary report on residents' cognitive performance and perceptions of the educational environment. *Medical Teaching*, *27*, 382-384. <http://dx.doi.org/10.1080/01421590500151021>
- De Oliveira Filho, G. R., Vieira, J. E., & Schonhorst, L. (2005). Psychometric properties of the Dundee Ready Educational Environment Measure (DREEM) applied to medical residents *Medical Teaching*, *27*, 343-347. <http://dx.doi.org/10.1080/01421590500046387>
- Foster, P. L. A., Kang, I., Anderson, V. R., Thomson, W. M., Meldrum, A. M., & Moffat, S. M. (2013). Changes in Bachelor of Oral Health students' perceptions of their dental education environment. *New Zealand Dental Journal*, *109*, 134-140.
- Foster, P. L. A., Kang, M., Anderson, V., & Thomson, W. M. (2012). Appraisal of the Dundee Ready Educational Environment Measure in the New Zealand dental educational environment. *European Journal of Dental Education*, *16*, 78-85. <http://dx.doi.org/10.1111/j.1600-0579.2011.00725.x>
- Jeyashree, K., & Patro, B. K. (2013). The potential use of DREEM in assessing the perceived educational environment of postgraduate public health students. *Medical Teaching*, *35*, 339-340. <http://dx.doi.org/10.3109/0142159X.2012.737058>
- Khan, A. S., Akturk, Z., & Al-Megbil, T. (2010). Evaluation of the Learning Environment for Diploma in Family Medicine with the Dundee Ready Education Environment (DREEM) Inventory. *Journal of Educational Evaluation for Health Professions*, *7*, 1-3. <http://dx.doi.org/10.3352/jeehp.2010.7.2>
- Kossioni, A. E., Varela, R., Ekonomu, I., Lyrakos, G., & Dimoliatis, I. D. (2012). Students' perceptions of the educational environment in a Greek Dental School, as measured by DREEM. *European Journal of Dental Education*, *16*, 73-78. <http://dx.doi.org/10.1111/j.1600-0579.2011.00678>
- McAleer, S., & Roff, S. (2001). A practical guide to using Dundee Ready Education Environment Measure (DREEM). In J. M. Genn (Ed.), *Curriculum, Environment, Climate, Quality and Change in Medical Education: A Unifying Perspective AMEE Education Guide No 23* (Dundee: Association for Medical Education in Europe, pp. 29-33).
- Ostapczuk, M. S., Hugger, A., de Bruin, J., Ritz-Timme, S., & Rothhoff, T. (2012). DREEM on, dentists! Students' perceptions of the educational environment in a German dental school as measured by the Dundee Ready Education Environment Measure. *European Journal of Dental Education*, *16*, 67-77. <http://dx.doi.org/10.1111/j.1600-0579.2011.00720>
- Paukert, J. L., & Richards, B. (2000). How medical students and residents describe the roles and characteristics of their influential clinical teachers. *Academic Medicine*, *75*, 843-844. <http://dx.doi.org/10.1097/00001888-200008000-00019>
- Roff, S., McAleeri, S., Harden, R. M., Al-Qahtani, M., Ahmed, A. U., Deza, H., . . . Primparyon, P. (1997).

- Development and validation of the Dundee Ready Education Environment Measure (DREEM). *Medical Teaching*, 19, 295-299. <http://dx.doi.org/10.3109/01421599709034208>
- Sobral, D. (2004). Medical students' self-appraisal of first-year learning outcomes: Use of the course valuing inventory. *Medical Teaching*, 26, 234-238. <http://dx.doi.org/10.1080/0142159042000192028>
- Thomas, B. S., Abraham, R. R., Alexander, M., & Ramnarayan, K. (2009). Students' perceptions regarding educational environment in an Indian dental school. *Medical Teaching*, 31, 185-186. <http://dx.doi.org/10.1080/01421590802516749>
- Tomás, I., Millán, U., Casares, M. A., Abad, M., Ceballos, L., Gómez-Moreno, G., . . . Palés, J. (2013). Analysis of the 'Educational Climate' in Spanish Public Schools of Dentistry using the Dundee Ready Education Environment Measure: a multicenter study. *European Journal of Dental Education*, 17, 159-68. <http://dx.doi.org/10.1111/eje.12025>
- Ullian, J. A., Bland, C. J., & Simpson, D. E. (1994). An alternative approach to defining the role of the clinical teacher. *Academic Medicine*, 69, 832-838. <http://dx.doi.org/10.1097/00001888-199410000-00013>
- Vieira, J. E., Nunes, M. D. P. T., & Martins, M. D. A. (2003). Directing student response to early patient contact by questionnaire. *Medical Education*, 37, 119-125. <http://dx.doi.org/10.1046/j.1365-2923.2003.01431.x>

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/3.0/>).