ORIGINAL ARTICLE

Evaluation of Students' Opinion about Seminars Conducted with Problem Based Learning Method in Endodontics Department of Mashhad Dental School

Background: The purpose of the descriptive study was to investigate students' attitude, who attend their fifth and sixth years of study, about endodontics seminars using problem based learning method at Mashhad Dental School.

Methods: It is a descriptive study conducted on fifth and sixth grade students of Mashhad Dental School in 2012-2013 academic years. Data were gathered via questionnaire. Four three-hour seminars were held by one of endodontic staff; using problem based learning method (in the form of slide show and question/response). Each group contained 7-10 students. After testing the validity and reliability of questionnaires, the anonymous questionnaire was distributed among students at the end of morning and afternoon sessions. The students were supposed to answer and return the questionnaires to endodontic department. The results are presented through descriptive statistics.

Result: According to the results of the study, satisfaction of fifth and sixth grade students from clinical seminars was higher than average (upper than 50%). Based on the conducted assessment, seminars improved students' awareness about their weaknesses and strengths, professional knowledge, interest and attention.

Conclusion: Based on the result of this study, it appears that seminars and discussions in small groups are useful in order to promote dental education.

Key words: Clinical seminar, Dental students, Problem based learning method

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بررسی نظرات دانشجویان درباره سمینارهای درون بخشی برگزار شده به روش آموزش بر پایه حل مساله در بخش اندودانتیکس دانشکده دندانپزشکی مشهد

زمینه و هدف : هدف از این پژوهش توصیفی، بررسی دیدگاه دانشجویان سال پنجم و ششم دندان پزشکی مشهد نسبت به برگزاری سمینار های درون بخشی اندودانتیک بر پایه روش حل مساله بود.

روش: این پژوهش، مطالعه ای توصیفی بوده وجامعه آماری آن دانشجویان سال پنجم و ششم دندانپزشکی مشهد در سال تحصیلی ۱۳۹۱-۱۳۹۰بودند. ابزار گردآوری اطلاعات به صورت پرسشنامه بود.سمینار ها در چهار جلسه ۳ ساعته توسط یکی از اساتید گروه اندو به صورت ارائه مساله در قالب نمایش اسلاید و پرسش وپاسخ در گروه های ۷- ۱۰ نفره برگزار می گردید.پس از تایید روایی وپایایی ،پرسشنامه های بدون نام در پایان هر سکشن در دو گروه صبح و بعد از ظهر بین دانشجویان سال پنجم وششم توزیع شد . دانشجویان موظف بودند پرسشنامه تکمیل شده را به همراه ریکارمنت عملی خود به منشی گروه تحویل دهند. سپس پرسشنامه ها جمع آوری شده ونتایج در قالب آمار توصیفی ارائه گردید.

یافته‌ها: طبق نتایج مطالعه حاضر، میزان رضایت مندی دانشجویان سال پنجم وششم از برگزاری سمینار ها در مجموع از حد متوسط بالاتر بود (بالای ۵۰٪). بر اساس نظر سنجی انجام شده، سمینار ها موجب درک نقاط قوت و ضعف دانشجو، ارتقا دانش حرفه ای و افزایش علاقه و دقت نظر آنها گردید.

نتیجه گیری :بر اساس نتایج این مطالعه ، به نظر میرسد برگزاری سمینار های درون بخشی و بحث گروهی در قالب گروه های کوچک در جهت ارتقا آموزش دندان پزشکی مفید می باشد.

واژه های کلیدی: نظرسنجی ،سمینارهای درون بخشی، دانشجویان دندانپزشکی، آموزش بر پایه حل مساله

تحلیل آراء الطلاب تجاه المحاضرات التی تم اجراءها علی اساس اسلوب حل الامسئله فی قسم الإندودانتیکس فی کلیه طب الاسنان فی جامعه مشهد الطبیه

التمهید و الهدف :

الأسلوب: إن هذه الدراسه التوصیفیه تم اجرائها علی طلاب السنه الخامسه و السادسه فی کلیه طب الاسنان عام 1391-1390. تم تجمیع المعلومات عبر استمارات . تم القاء المحاضرات عبراربعه جلسات امتدت کل جلسه الی ثلاث ساعات و تم القاء المسأله عبرالإستاذ بواسطه برنامج power point و تم تقسیم الطلاب الی مجموعات مولفه من ۱۰-۷ اشخاص. تم تأیید الإستمارات من قبل اشخاص ذوصلاحیه و اعطیت الی الطلاب بدون اسم خلال فریقین قبل الظهر و بعدالظهر. کانت وظیفه الطلاب تکمیل الاستماره إعطائها مع الریکارمنت الی سکریترة القسم . بعد ذلك تم تجمیع المعلومات و تحلیلها عبرالاحصاء التوصیفی.

الإستنتاج: اشارت هذه الدراسه الی إن مستوی الرضا عند طلاب السنه الخامسه و السادسه کان اعلی من الحدالمتوسط ای اعلی من (۵۰٪) . وایضا اشارت هذه الدراسه الی أن هذه المحاضرات ادت الی ارتقاء المعرفه الحرفیه و مستوی العلاقه و دقة النظر و تم من خلال هذا الأسلوب کشف نقاط القوه و الضعف عند الطلاب.

النتائج: نستفید من هذه الدراسه إن اسلوب المحاضرات فی داخل القسم و البحث داخل مجموعات صغیره یکون مفید جدا فی رفع المستوی التعلیمی عند طلاب طب الاسنان .

الکلمات الرئیسیه: تحلیل الاراء، محاضرات داخل القسم، طلاب کلیه طب الاسنان ، التعلیم علی اساس حل المسأله .

پرابلم بیسڈ ٹکنیک کی اساس پر سیمیناروں کے بارے میں ڈینٹل طلباء کے نظریات کا جائزہ

بیک گراونڈ: اس تحقیق کا مقصد انڈو ڈانٹکس شعبے میں منعقدہ سیمناروں کے بارے میں ڈینٹل میڈیسن کے پانچویں اور چھٹے سال کے طلباء کے نظریات معلوم کرنا تھا۔

روش: یہ ایک توصیفی تحقیق تھی جس میں ڈینٹل میڈیسن کے پانچویں اور چھٹے برس کے طلباء کو شریک کیا گیا۔ یہ تحقیق دوہزار گیا رہ اور بارہ میں انجام دی گئي۔ تحقیق میں شریک افراد کو سوالنامے دئے گئے۔ سیمنار کے تین جلسے ہوئے جو تین گھنٹوں پرمشتمل ہوتے تھے۔ سیمنار میں اسلائیڈس دکھائي جاتی تھیں اور سوال وجواب کئےجاتے تھے۔ اس کے بعد ہر جلسے کے اختتام پر طلباء کو بغیر نام کے سوالنامے دئے جاتے تھے۔ ڈاٹا کا تجزیہ توصیفی اعداد و شمار سے کیا گیا۔

نتیجے: اس تحقیق سے پتہ چلتا ہےکہ سیمیناروں کے تعلق سے پانچویں اور چھٹے برس کے ڈینٹل طلباء کی رضایت متوسط سے ذرا اوپر تھی۔ اس تحقیق کے مطابق سیمیناروں سے طلباء کے مثبت نکات اور ان کی کمزوریوں کو سمجھنے میں مدد ملتی ہے اور تعلیم میں ان کی دلچسپی کا سبب بنتے ہیں۔

سفارشات : اس تحقیق کے بعد یہ ظاہر ہوتا ہےکہ ہر شعبے میں سیمیناروں کا انعقاد مفید واقع ہوگا اور ڈینٹل میڈیسن میں گروہی بحث و مباحثہ بھی صلاحیتوں میں نکھار لانے کے لئے بےحد مفید ہے۔

کلیدی الفاظ: تجزیہ، سیمینار، پرابلم بسیڈ ٹیچنگ .

INTRODUCTION

Generally, dental education has been based on memorizing lessons and has paid less attention to problem-solving ability (1). Nowadays, there are vast volumes of information and knowledge so the traditional methods of dental education are not as effective as the past (2).

Therefore, it is necessary to substitute more effective educational methods with lectures. At the present time, lecturing is the preferred teaching method in dentistry. It is one of the most common methods for delivering substantial amount of information and knowledge to large numbers of students in different levels. Although the lecturer provide great amount of scientific materials for the students, there is not the possibility to assess their development; since it is known that lecturing is less effective in shaping attitude and stimulating thinking than other teaching strategies (3).

Problem Based Learning (PBL) was applied at McMaster University, Ontario, Canada for the first time (4). In this method, the students determine facts for a problem. Then, have brain storming about the problem and come up with ideas. The ideas help them to perceive how much information they need. Moreover, group discussion develops their knowledge and learning skills. In fact, learning needs are considered as the content of educational programs (5). The other advantages of PBL method are organizing the clinical situation, motivating learning, developing clinical skills, facilitating to make theories practical (6, 7).

Using this method in educational programs of dentistry has got positive and satisfactory results in Ireland, Singapore, Holland, Sued, and Finland (8-12). Tack et al. conducted a research in a dentistry faculty of Holland via questionnaire about PBL method, and reported students' satisfactory and the change in their knowledge in comparison with other teaching strategies (12).

Fichan and his colleagues adopted PBL method in groups of 6 students along with the observation of an instructor in California. They presented that the students were educated better in this method and their analytical skills and teamwork were developed to large extend (13). Choon et al conducted a systematic review research and showed that PBL improves learners' abilities in technical, social, cognitive, managerial, educational skills (14). However, other studies such as Brown (15) and Last (1) recognized no difference in indicators of their study between PBL and usual methods. In order to achieve the goals of clinical education, the present situation should be assessed repeatedly and recognize weaknesses and strengths. Analyzing students' ideas is a crucial method to identify the quality of clinical education. Therefore, the purpose of this study was to analyze students' perspective about endodontic seminars held in 2012-13 who attend their fifth and sixth years of study in Mashhad.

METHODS

This is a descriptive study; students, who were passing their fifth and sixth years of dentistry in Mashhad (2012-2013), where the target population. Data were gathered via questionnaire.

Students, who attended their fifth and sixth years of study, passed practical course of endo during one month. They were supposed to do their practical program. One day a week, there were seminars; therefore, there were four 3-hour sessions that were taught by a professor of endo faculty. The professor posed a problem for groups of 7-10 people. In order to have similar training, only one professor taught all the groups. The subjects of the seminars were chosen through need-assessment among 10 top students via interviews. The subjects of the fifth year seminars were theoretical including procedural accidents in treatment, cracked tooth and root fracture, endo emergency and drugs. The students that attended their six year of studies had theoretical and practical seminars including nickel titanium rotary file, MTA plug and traumatized teeth. At the beginning, professor explained the theory and then the students could work with rotary file or place MTA plug.

Seminar syllabus was classified according to goals, days and hours; the students had the syllabus so they were aware of the content and materials of each session. They had to study the materials before attending the class. During the session, professor taught and then the students asked and answered questions. Then, in order to strengthen students' clinical reasoning, a clinical situation was described and the students were asked to discuss about assumptions, the causes of probable problems and possible solutions. Finally, the professor concluded the discussion according to students' assumptions.

The designed questionnaire included 7 questions and a table (related to the contents of the seminars). There were Yes/No questions that should be answered according to the conditions of each question. The table was related to the importance and necessity of the seminars' contents; each student should select one choice from the three including: it is not sufficient (there should be more materials), it is enough and appropriate, it is too much (there should be less materials).

The validity of the questionnaire was assessed by Endodontic treatment faculty members (14 people), their recommendations were considered and then the final version of the questionnaire was devised. The reliability was evaluated via test-retest method among 15 students during two weeks. The Cranach's Alpha was 0.8. The questionnaires were distributed among the students that were attending their fifth and sixth years of study. All of these students took part in the study (they returned the questionnaires and the report of their practical task to the faculty). The sampling was conducted through census. Inclusion criteria were the students who were attending the practical course of endo and have participated all the seminar sessions. The exclusion criteria were the students who have not sign up for endo course or those who were absent during the course. All in all, 30 students of the fifth year and 40 students of the sixth year participated in the study.

After collecting the questionnaires, the results were presented in the form of descriptive statistics and tables.

RESULTS

The results of the questionnaire are presented in tables (1, 2 and 3).

Regarding the results of the fifth year, the students stated that more contents should be taught about endodontic emergencies, procedural accidents in treatment, cracked tooth and analysis of dental root, respectively. 86.6% of the students said that there are insufficient materials about endodontic emergencies. The percentages of other topics were 60%, 56.6% and 36.6%, respectively. The students' needs of the sixth year were rotary files, leaving the apical plug and trauma. The students believed that the content of each topic is not sufficient and the percentages are as follow 72.5%, 55% and 12.5%, respectively (table1 & 2).

According to the poll results, the sixth year students' suggestion for topics to be added to seminars were procedural accidents and the methods to prevent them, the causes of endo treatment failure, ways to speed up the work, diagnosis and treatment, methods to use apex locator, retreatment and digital radiography. However, the students of the fifth year suggested filing procedures, pain after treatment, abjuration and endo treatment for certain patients

The students who were attending the sixth year of their studies mentioned that number of sessions, the introduction of new tools, and the presentation of educational movies should be upgraded and increased in the course and the fifth year students suggested the presentation of educational movies and practical workshops.

DISCUSSION

This research has assessed endodontic treatment seminars that PBL method has been used to teach the students. The results reveal that the students' satisfaction of the course was over 50%. According to the poll results, seminars upgrade professionalism and the conception of students' strengths and weaknesses; moreover, it increases their interests and attention. The seminars were held in four three-hour sessions. 80% of both groups believed the time is sufficient. Most of the students of the fifth year were interested in endo emergency topic and the students of the sixth year were interested in rotary files. Botelho et al study represents that group discussion of teaching method provides and active atmosphere for all of the students with different levels of IQ. It was determined that group discussion method leads to bilateral exchange of knowledge and information and is more useful for students. However, the study revealed that students prefer lecture method. These results acknowledge the outcomes of our study which was based on group discussion (7-10 students) along with a faculty member of endodontics school of Mashhad.

In group discussion method, learners' cooperation is more serious and they are involved more, therefore, they would understand the contents better that will lead to more lasting learning. They will learn the content by heart because of using their own reasoning and judgment.

According to the results, it seems that seminars and small group discussions could upgrade dental education. During the sessions, PBL method was used including stating the problem and organizing the ideas, asking questions, discussing about the questions, providing solutions and finally the conclusion of the professor.

Based on psychologist theory, learning becomes better and more influential when the students participate actively. There are some evidences that show PBL method helps the students to use their knowledge and skills in the treatment of patients (18). Other studies present that gaining experience via PBL method is very influential on the future of dentistry (19).

Table 1. fifth-year students' needs of the seminars' topics

	Fifth-year students		
Topic	**It is too much & should be reduced**	**It is sufficient and appropriate**	**It is not sufficient should be increased**
Procedural accidents during endo treatment	0%	40%	60%
Cracked tooth and root fracture	10%	33/4%	56.6%
Emergencies and drugs	0%	13/4%	86.6%
analysis	6.7%	56.7%	36.7%

Table 2. sixth-year students' needs of the seminars' topics

	Sixth- year students		
Topic	**It is too much & should be reduced**	**It is sufficient and appropriate**	**It is not sufficient should be increased**
Traumatized teeth	%15	%72/5	%12/5
Rotary nickel titanium files	%5	%22 /5	%72/5
MTA apical plug	%2/5	%42/5	%55

Table 3. Frequency of evaluation areas

Evaluation areas	Fifth year				Sixth year			
	Yes		No		Yes		No	
	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency
Relationship between topics and the professionalism need	76.6	23	23.4	7	85	34	15	6
Conception of students'' weaknesses and strengthens	90	27	10	3	85	34	15	6
Proportion with students' scientific level	86.6	26	13.4	4	92.5	37	7.5	3
Increase of interest and accuracy	79.9	24	20.1	6	80	32	20	8
Group discussion and presenting problems	79.9	24	20.1	6	77.5	31	22.5	9
Proportion of topic and content	79.9	24	20.1	3	92.5	37	7.5	3
Time Proportion	9.79	24	20.1	6	80	32	20	8

There are some activities that enhance the influences of teaching such as asking questions, discussion, presenting the topic in slides, providing the information for the students before the session and providing practical atmosphere for them. All of these factors were considered in the study. Moreover, because of the impact of educational conditions and purposes, the same professor taught all the seminars for both groups.

PBL seminars increased the interest and attention among 80% of the students that is similar to results of other studies. So, the students prefer PBL method to lecture method (19). The results of the study was similar to another one which assessed biology course taught to freshmen of medicine via PBL method and showed that 70% of the students were agree with this method and suggested other course be taught similarly (20).

The students had constructive suggestions for seminars such as teaching theoretical topics along with practice, allocating more time for PBL method, presenting educational movies and adding other topics (apex locator, endo treatment for certain patients, digital radiography, and etc.)

The limitation of the study was the essence to have similar teaching for all of the students; it was not possible to divide the students into two groups and held the seminar for only one group. Therefore, it is suggested to compare this method with other methods, gather the opinions of graduated students and compare with the results of the study.

It should be mentioned that this method requires more facilities such as room, teaching aids and human resources. Also, the faculty members should spend more time to program carefully. The other issues are long-term evaluation and the comparison of students' abilities, which have been taught with this method, with other methods, as well, in future studies.

The study shows that PBL method of teaching in clinical education could be substituted with classical methods of teaching or used as a complimentary method. This method is useful to upgrade the educational system and the students' motivation among dentistry students. Moreover, the quality of education and long-term learning would be enhanced.

REFERENCES

1. Gaengler P, De Vries J, Akota L, Balciuniene I, Berthold P, Gajewska M, et al. Student selection and the influence of their clinical and academicenvironment on learning. Eur J Dent Educ. 2002; 6 Suppl 3: 8-26.
2. Plasschaert AJ, Lindh C, McLoughlin J, Manogue M, Murtomaa H, Nattestad A, Sanz M. Curriculumstructure and the European credit transfer system for European dental schools: part I. Eur J Dent Educ .2006 Aug; 10(3): 123-30.
3. Golden AS. Lecture skills in medical education. Indian J pediatr. 1989 jan- Fe; 56(1):29-34.
4. Hoad-Reddick G, Theaker E. Providing support for problem-based learning in dentistry: the Manchesterexperience. Eur J Dent Educ. 2003 Feb; 7(1): 3-12.
5. Saunders TR, Dejbakhsh S. Problem-based learning in undergraduate dental education: facultydevelopment at the University of Southern California School of Dentistry. Journal of Prosthodontics.2007; 16(5): 394-9.
6. Baker CM, Pesut DJ, McDaniel AM, Fisher ML.Evaluating the impact of problem-based learning onlearning styles of master's students in nursing administration. J Prof Nurs. 2007; 23(4): 214-19.
7. Williams SM, Beattie HJ. Problem based learning in the clinical setting: a systematic review. Nurse EducToday. 2008; 28(2): 146-54.
8. Kelly M, Shanley DB, McCartan B, Toner M, McCreary C. Curricular adaptations towards problembased learning in dental education. Eur J Dent Educ. 1997 Aug; 1(3): 108-13.
9. Lim LP, Chen AY. Challenges and relevance of problem-based learning in dental education.Eur J DentEduc. 1999 Feb; 3(1): 20-6.
10. Rohlin M, Petersson K, Svensäter G. The Malmö model: a problem-based learning curriculum inundergraduate dental education. Eur J Dent Educ. 1998 Aug; 2(3): 103-14.
11. Kerosuo E, Ruotoistenmäki J, Murtomaa H. Report on the development of

a new dental curriculum atHelsinki. Eur J Dent Educ. 2001 Feb; 5(1): 23-30.
12. Tack CJ, Plasschaert AJ. Student evaluation of a problem-oriented module of clinical medicine within a revised dental curriculum.Eur J Dent Educ. 2006 May; 10(2): 96-102
13. Fincham AG, Baehner R, Chai Y, Crowe DL, Fincham C, Iskander M, et al. Problem-based learning at niversity of Southern California School of Dentistry. J Dent Educ. 1997 May; 61(5): 417-25.
14. Choon-HuatKoh G, EngKhoo H, Wong ML, Koh D. The effects of problem-based learning duringmedical school on physician competency: a systematic review. Canadian Medical Association Journal .2008; 178(1): 34-41.
15. Brown G, Manogue M, Rohlin M. Assessing attitudes in dental education: is it worthwhile? Br Dent J.2002 Dec 21; 193(12): 703-7.
16. Last KS, Appleton J, Stevenson H. Basic science knowledge of dental students on conventional andproblem-based learning courses at Liverpool. Eur J Dent Educ. 2001 Nov; 5(4): 148-54.
17. BotelhoM. G,Odonnell D .Assessment of the use of Problem - Orientated, Small-group Discussion for Learning of a Fixed Prosthodontic, Simulation Laboratory Course.British Dental Journal (BDJ). 2001; 191(11): 630-3.
18. Aeen F, Noorian K. [Problem-based learning or lecture-based learning: an experiment of pediatricnursing education]. Journal of Shahrekord Medical Sciences University. 2006: 8(2): 16-20. [Persian]
19. Katsuragi H. Adding problem-based learning tutorials to a traditional lecture-based curriculum:a pilotstudy in a dental school. Odontology. 2005; 93(1): 80-5.
20. Koleini N, Farshidfar F, Shams B, Salehi M. [Problem based learning or lecture: a new method of teaching biology to first year medical students: an experience]. Iranian Journal of Medical Education. 2003; 3(2): 54-8. [Persian]