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Dental students' perceptions on preclinical restorative dentistry course: Biruni University case

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ABSTRACT

Objectives. The student's perspectives of their restorative dentistry education would be an important source of information for evaluation of preclinical curriculum. Thus, the aim of the present research was to obtain information from second-year students at Biruni University dental school about their preclinical restorative dentistry program perceptions, levels of stress during preclinical courses and preparedness for upcoming restorative dentistry courses in clinics. ***Methods.*** The present survey was carried out on the second year students in dental school in Istanbul. The survey composed of items regarding students' perspectives regarding to the levels of their stress in preclinical restorative dentistry courses as well as preparedness for future restorative dentistry courses in clinic. Student's t-test was applied to the data. ***Results.*** Students found posterior composite restorations lessons more stress-full than amalgam restoration lessons. They expressed that knowledge they obtained from the lectures is adequate for preclinical courses and they felt themselves prepared for the restoration of posterior teeth in clinic. ***Conclusions.*** Second-year student's perceptions of preclinical restorative dentistry curriculum in Biruni University were highly positive. The student's perspectives of their restorative dentistry curriculum would be an important source of information for dental faculty staff in order to establish an adequate preclinical curriculum for the students who start delivering public patient care in the future.

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Keywords: Restorative dentistry, preclinical course, student perception

Introduction

Preclinical courses are the essential components of restorative dentistry education in dental schools. Preclinical courses enable students to acquire and develop their fundamental dental skills, gain knowledge about the clinical aspects of to restoring carious and/or defective teeth [1, 2]. These fundamental skills are taught through lectures, and simulated exercises in a preclinical courses using either artificial or extracted natural teeth, prior to the student delivering care to an actual patient in the clinic. Thus, for the dental student who will deliver care to patients in clinics, it is desirable that preclinical education prepare students individually ready for beginning to patient care [3].

Preclinical restorative dentistry courses present in the second-year and third-year curriculum programs

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of dentistry school in dental school of Biruni University that was settled in 2014 in Istanbul, Turkey. The aim of preclinical restorative dentistry courses in the second year curriculum concentrates to provide knowledge and skills in the restoration of posterior teeth with using amalgam material or resin composites, while courses in third year are decided to provide knowledge and skills of restoration of anterior teeth and simulation of clinical restoration procedures with using a mannequin model. During the second and third year, theoretical restorative dentistry lessons which are prepared by reviewing classical textbooks are given weekly. These lessons are related to subsequent preclinical sessions as well as other topics of restorative dentistry. However, at the start of each preclinical course session in which a restorative procedure will be presented firstly, demonstration and PowerPoint presentations are performed via a video camera in preclinical session according to course curriculum (Table 1). Students should complete restorative procedures for different restoratives in plastic or natural teeth. Two groups of each 40-45 students are supervised by two fixed instructors over 32-week course in second year at the dental school of Biruni University. At the end of each session, each student performance is reviewed by the same instructor and provided feedback for each tooth in the session for the first 16-week period of the restorative dentistry course. In the second 16-week period of restorative dentistry course, seasonal performances of students were not reviewed on weekly, however, an additional practical exam is utilized to review overall performances of students through the second midterm. The evaluation of weekly performances of students was done using assessment point sheets for each restorative procedures in the preclinical restorative curriculum by one instructor through the academic year.

Dental student perspectives on the structure and content of their dental education experience are an important part of an evaluation of the curriculum [1]. Despite that, it is stated that student perspective on

Table 1. Preclinical restorative dentistry curriculum for second year student at Biruni University (2016-2017)

Week	Laboratory topic	Activities
1	Introduction to restorative dentistry course.	
2 - 4	Occlusal cavity and class V cavity preparation on plastic teeth (for amalgam)	Tooth 35, 35, 36, 37, 46, 37 O
5 - 7	Proximal cavity preparation on plastic teeth (for amalgam)	Tooth 24 , 25 MO, 26, 27 DO, 34, 35, 36 MO, 37 DO, 44, 45, 46, 47 MO
8	Reparation week. Students with unacceptable performance in the previous lessons redo their preparations in this week.	
9	Midterm practical exam	Tooth 45 DO cavity preparation, 46 MOD and 47 DO cavity preparations with base placement
10 -12	Complex cavity preparation on plastic teeth (for amalgam)	Tooth 14, 15 DO, 16 DOP+MO, 17 DO, 45 MOD, 46 O, 47 MOD, 21, 22, 23 ML, 26 MOD
13-16	Cavity preparation and placing of base material on plastic teeth (for amalgam)	Tooth 34 MO, 35, 36, 37, 14 , 15 O, 16 MOD, 17 O, 24 MO, 25 O, 26 MOD, 27 O
17-20	Cavity preparation, placing of base material and amalgam restoration on plastic teeth	Tooth 44 O, 45 DO, 46 DO, 47 O
21	Amalgam polishing and sectioning of tooth in sagittal on natural teeth	Polishing amalgam restorations performed in the previous session.
22-23	Caries removal on natural teeth	Eight molar, eight premolars
24-25	Composite restoration on natural teeth	Eight molars, eight premolars
26-27	Occlusal composite restoration on plastic teeth	Tooth 14, 15, 16 , 24, 25, 26 O
28-31	Proximal composite restoration on plastic teeth	Tooth 35, 36, 37 MO, 45 DO, 46 MOD, 47 MOD, 14 DO, 15 MO, 16 MOD, 17 MO
32	Additional practical exam (composite restoration)	Tooth 15 DO, 16 MOD composite restorations
33	Final Exam	Tooth 15 DO cavity preparation with base placement, 16 DO composite restoration, 17 DO amalgam restoration

D = distal, L= lingual, M =mesial, O = occlusal

their educations generally undocumented in the literature. Because some sources suggested that dental students are not satisfied with their education [4], while others stated that students provided positive feedback about their experiences in dental schools in the form of anecdotal reports [1]. Therefore, negative perceptions that might have unexpected results on performances of students throughout their dental educations and their total satisfaction with dentistry may stay invisible. Thus, the aim of the present study was to gain knowledge about students' perception on preclinical restorative dentistry courses in dental school of Biruni University.

Methods

The present research was carried out on the second year students at the dental faculty of a foundation university (Biruni University, Faculty of Dentistry). A survey of Dikbas *et al.* [5] was modified to assess students' perceptions of the restorative dentistry curriculum. Nameless survey forms were divvied to 84 students of the dental school at the last week of the academic year.

The survey continued over the length of preclinical course. Students were instructed that completing and returning survey were not mandatory and the process had no association with grading before completing the survey forms. It was expressed to the students at the start of the survey that the privacy of the participating students was guaranteed and all data would be retained rigorously private.

The survey composed of 9 items regarding their thoughts about the adequacy of knowledge they received from their preclinical training and their stress levels in preclinical courses. Items were commonly focused on students' perceptions of their preparedness in terms of hand-skills and clinical practices. The first 8 items were multiple-choice with 3 answer options rated from 1 to 3 and students were asked to make scorings in amalgam and composite restorations, individually. The 9th question was open ended and inquired about students' personal opinion and

Table 2. Evaluation of the answers on amalgam and posterior composite restorations

Questionnaire items		Students (%) (n=79)		
		Amalgam restoration	Posterior composite restoration	*p* value
Please rate your level of stress during the preclinical course?	Not stressful	46.8	34.2	**0.033**
	Stressful	43.0	44.3	
	Very stressful	10.1	21.5	
What do you think about the length of the preclinical courses?	Too short	25.3	38.0	**0.006**
	Just right	73.4	62.0	
	Too long	1.3		
Do you think you have enough interaction about your preclinical work with your instructors during preclinical courses?	Not enough	7.6	5.1	0.319
	Just right	74.7	72.2	
	More than enough	17.7	22.8	
Do you feel the knowledge you have obtained from the lectures is adequate for preclinical courses?	Not adequate	2.5	-	0.951
	Just right	69.6	71.8	
	More than adequate	26.6	28.2	
Do you think the knowledge you gained from the lectures is helpful in preparing for clinical practice?	Yes	87.3	87.3	1.000
	No	3.8	3.8	
	Not certain	8.9	8.9	
How prepared (from your pre-clinical experiences) do you feel about treating patients in the clinic? (self-confidence)	Unprepared	30.4	32.9	1.000
	Just right	49.4	44.3	
	Well prepared	20.3	22.8	
Do you think you have enough clinical-skill (hand-skill) training to treat patients in the clinic?	Not enough	19.0	24.1	0.585
	Just right	68.4	63.3	
	More than enough	12.7	12.7	
How helpful are demonstrations in helping you understand pre-clinical and clinical knowledge and skills?	Not helpful	8.9	7.6	0.879
	Helpful	69.6	73.4	
	Very helpful	21.5	19.0	

Students t-test was used ($p < 0.05$).

suggestions for the improvement of the preclinical restorative dentistry courses.

Statistical Analysis

The percentages were obtained with respect to each question. Data were analyzed using SPSS version 16. Differences between group means were analyzed using students t-test. The significance was set at $p<0.05$.

Results

The response rate of this questionnaire was 94%. Findings of student's answers to the questions were summarized in Table 2. Regarding to stress levels during preclinical laboratory exercises, students reported significantly higher stress levels for posterior composite restorations lessons compared amalgam restoration lessons ($p = 0.033$). Thirty-eight percent of students expressed that length of preclinical courses of composite restorations were short with significantly different when compared to amalgam restoration courses (25.3%) ($p = 0.06$). Only 5.1% and 7.6% of the students stated that they have not enough interaction work their preclinical performance work with their instructors during laboratory exercises for posterior composite and amalgam restorations, respectively. Almost all of the students expressed that they felt that the knowledge they had gained from lectures were adequate for laboratory exercises for both amalgam and posterior composite lessons. The majority of students thought that the knowledge they obtained from the lectures was helpful in preparing for clinical practice for both amalgam (87.3%) and posterior composite restorations (87.3%). Almost two out of three of the students reported that they felt "just right" or "well prepared" about treating patients in the clinic for amalgam and composite restoration respectively. With similar ratings, students stated that they gained enough clinical-skill (hand-skill) training to treat patients in the clinic for both materials. The majority of students expressed that they found demonstrations in helping them understand pre-clinical and clinical knowledge and skills.

Discussion

Numbers of newly settled dentistry faculties in state zone or in the private zone in Turkey have increased during the last decade. Majority faculty staff of these new dental schools would be considered as a new generation academics with little or no teaching experience. Thus, a training of a new generation of dental faculty staff appeared an urgent question to be solved. However, training and teaching experiences in these newly settled dental schools at different departments in terms of students' perspectives would be an important information for assessing quality of dental education curriculums in these dental schools.Therefore, in this study, information about second year-students perspectives of their restorative dentistry preclinical course and stress level during these courses and preparedness for future clinical patient care in restorative dentistry was obtained in Biruni University which was settled in 2014.

Preclinical courses of restorative dentistry are interactive lessons in their nature as students often ask questions about their performances to the instructors during the course. Instructions should check whether each student gains learning objects in preclinical curriculum and able to apply them on their weekly performance correctly to this interaction. If a student realize that he/she achieved to learn and apply preclinical lesson objectives on his/her weekly performance by the interaction with the instructors during course, it's likely that student feel and see that theoretical knowledge which they obtained from lectures are adequate for preclinical courses and they feel self-confidence for delivering patient care with restorative dentistry procedures they experienced in preclinical courses. Thus, the interaction of students with their instructors during preclinical courses seems to be a pivotal educational process to prepare students for clinical service care. The majority of the students enrolled to this survey reported that they had an enough or more than enough interactions with their instructors. The high positive reports also exist for regarding the helpfulness of lectures in preparing them for clinical practice. A previous research stated that students' rating for this interaction could be lower in State universities.They suggested that a high number of students and low number of instructors in the State schools would be reasons for lower interaction ratings by students. However, in Biruni University case presented in this study, there were only two instructors and eight-five second year students in restorative dentistry preclinical course. Thus, it can be suggested that despite low number of instructors and high number of students, high student's rating for

interaction during courses could be achieved in some cases.

Dental students should acquire of psychomotor skills during the preclinical course of restorative dentistry to be prepared to deliver patient care in the clinics [6, 7]. According to the Suksudaj *et al.* [6], several important factors can influence skill acquisition of students, including student-related factors, i.e. level of innate ability and motivation, and non-student related factors, i.e. learning environment. According to learning theories, students should have cognitive ability to understand procedures regarding a particular task [8]. Therefore, performing demonstrations of restorative dentistry procedures; i.e. incremental placing of resin composite into the prepared proximal cavity at the preclinical courses would increase students' cognitive abilities, helping in improvement their psychomotor skill and increasing feeling preparedness of the students for near future clinic practice. In the present study, most of students found demonstrations "helpful" or "very helpful" in helping them understand preclinical and clinical knowledge and skills for amalgam and posterior composite restorations.

Another factor that would have a significant effect on acquisition of skill in restorative dentistry is a motivation [9]. Motivation means the effort which is separated to tasks. High effort or motivated people tend to reach a high level of performance [6]. In this survey, almost one of each three students reported that the length of the preclinical course is short, although three hours were allocated to preclinical course every week. This demand of students for a long preclinical course may indicate that motivation of students is high. This would contribute high positive perspectives and high rate of felling preparedness for the clinic practice of students for restorative dentistry courses in Biruni University.

For an instructor interest, having information about how prepared his students felt about delivering patient care in the clinic is an important merit him assessing his education program. This study revealed that two thirds of students reported that they did feel prepared or well prepared to perform amalgam and posterior composite restoration in the clinic. Similar ratings were reported when they asked if they think have enough hand-skill training to treat patients in the clinic. There is an obvious link between feeling preparedness and having enough hand-skill in the perspectives of the students in restorative dentistry. However, some other factors which are related to the medical condition of students would have an important influence on skill acquisition and feeling preparedness for clinical practices. These are included eye defects, i.e. myopia and astigmatism, and unexplained hand tremor. Even though a student has a enough cognitive ability, motivation, and perceptual speed ability is required to find the most effective way to achieve the task, these medical conditions would reduce psychomotor ability of a student [6], thus preventing student to assess their work accurately or prevent perform high quality work.Therefore, the author suggests that instructors should determine these students at the earliest preclinical course session and inform their parents about this issue to improve skill acquisition of these students.

Conclusions

The present survey would be the first research regarding to students' perceptions of preclinical restorative dentistry courses among Turkish Dental Schools. Obtaining information dental students' perceptions of feeling being preparedness and their level of stress during their preclinical courses prior to delivering patient care in the clinic would lead to preclinical restorative dentistry curriculum. Based on the findings, second-year student's perceptions on preclinical restorative dentistry curriculum in Biruni University were highly positive. The author suggests that similar questionnaires would be carried out in other newly settled Turkish dental schools.

Conflict of interest

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