

Evaluation of the Relationship between the Pre-Clinical and Clinical Courses Grades of Dental Students in Tabriz University of Medical Sciences

Negin Ghasemi¹, Parisa Flsafi^{*2}, Kazem Khodadoust³, Ayla Bahramian²,
Mohammadali Ghavimi⁴, Arezoo Ghoreishizadeh⁵

¹Assistant Professor Of Endodontic, Dental Faculty Of Tabriz University, Tabriz, Iran.

²Assistant Professor Of Oral Medicine, Dental Faculty Of Tabriz University, Tabriz, Iran.

³Ph.D, Educational Development Office, Dental Faculty Of Tabriz University, Tabriz, Iran

⁴Assistant Professor Of Oral And Maxillofacial Surgery, Department Of Oral And Maxillofacial Surgery,
Dental Faculty Of Tabriz University Of Medical Science, Iran.

⁵Department Of Paediatric Dentistry, Faculty Of Dentistry, Tabriz University Of Medical Sciences, Tabriz,
Iran.

Abstract

Aims: The present study was carried out to evaluate the relationship between the grades of pre-clinical and clinical courses of endodontics, fixed prosthodontics and restorative dentistry achieved by dental students entering Tabriz Faculty of Dentistry in 2009, 2010 and 2011.

Materials and methods: The subjects in this retrospective cross-sectional study consisted of dental students entering Tabriz Faculty of Dentistry in 2009, 2010 and 2011 (n=48 students each year). The grades of the students in restorative dentistry, fixed prosthodontics, endodontics I (pre-clinic) and endodontics II (clinic) courses were recorded by referring to the Archives of the Education Office of the Faculty. The means and standard deviations of the grades were calculated. T-test was used to compare the means and standard deviations with SPSS. Statistical significance was set at $P < 0.05$.

Results: There were significant differences in all the grades between the clinical and pre-clinical lessons ($P < 0.05$). In relation to the operative dentistry and endodontics courses, the clinical courses grades were significantly lower than those in the pre-clinic courses ($P < 0.05$). However, in relation to the practical fixed prosthodontics courses, the grades in clinical courses were significantly higher than those in the pre-clinical courses ($P < 0.05$).

Conclusion: Under the limitations of the present study, of all the grades in the clinical courses, the grades in the practical fixed prosthodontics courses were higher than those in the pre-clinical courses.

Keywords: Endodontics, restorative dentistry, fixed prosthodontics, pre-clinic, clinic.

I. Introduction

Promotion of the quality of education requires continuous evaluation of educational status of university students during the whole study period and comparison of their grades at different stages of education (1). Dentistry is a combination of art and science. A harmony between what is learned and what is applied in the clinic is of utmost importance (2). Professors should provide a situation so that as the students learn the theoretical lessons, they can gain skills in the clinic, too (3). Keeves and Larkin (1966) carried out a super analysis of the projects that have evaluated the relationship between the final progress in learning with the initial progress and reported that the final progress in learning has a significant relationship with the initial progress (4).

In addition, Danesh Kazemi et al (2014) carried out a study to evaluate the correlation between the grades in theoretical and practical lessons of restorative dentistry in dental students in Yazd University of Medical Sciences and reported a significant correlation between the grades in all the theoretical and practical lessons of restorative dentistry (5). However, Adhami et al (2012) did not report a significant correlation between the correlation coefficients of the grades in practical and theoretical lessons in pharmacology students in Kerman University of Medical Sciences (6). In the field of dental education, the transition from the pre-clinical period to the clinical period is very sensitive because the students have to attend the clinic and render services to patients. Evaluation and comparison of the grade achieved during these two periods might reveal the weak and strong points of students in learning the practical aspects of the related lessons. In addition, such comparison might create the proper conditions in which the professors can adapt the pre-clinical lessons to the needs of students in the clinic so that the scientific knowledge of students can be improved. Furthermore the

university can determine its and the professors' strong and weak points and prepare proper guidelines for the promotion of the quality of education (7–9).

No studies to date have compared the relationship between the pre-clinical and clinical grades of dental students. The aim of the present study was to compare the grades in the pre-clinical and clinical courses of endodontics, fixed prosthodontics and restorative dentistry achieved by dental students entering Tabriz Faculty of Dentistry in 2009, 2010 and 2011.

II. Methods

The subjects in the present retrospective cross-sectional study consisted of dental students entering Tabriz Faculty of Dentistry in 2009, 2010 and 2011 ($n=48$ students each year). The lessons and courses evaluated were endodontics, fixed prosthodontics and restorative dentistry (both pre-clinical and clinical). The students' grades in these lessons were extracted from the Archives of the Evolution Office of the Faculty. The means and standard deviations of the grades were calculated for each lesson. T-test was used to compare the mean grades between the pre-clinical and clinical units in each field for all the students with SPSS. Statistical significant was defined at $P<0.05$.

III. Results

Table 1 presents the means and standard deviations of the lessons evaluated, separately for students in each year. In all the three groups of students and in all the lessons, there were significant differences between the pre-clinical and clinical grades ($P<0.05$). In relation to the grades in restorative dentistry and endodontics, the grades in the clinical lessons were significantly lower than those in the pre-clinical lessons ($P<0.05$). However, in relation to the fixed prosthodontics, in all the three student groups, the grades in the clinic were higher than those in the pre-clinic ($P<0.05$) (Table 1).

IV. Discussion

The present study was undertaken to determine the correlation coefficients between the grades in the restorative dentistry, endodontics and fixed prosthodontics lessons in the clinical and pre-clinical courses of students in the Faculty of Dentistry, Tabriz University of Medical Sciences.

Overwhelming evidence indicates that an educational system is able to fulfill its responsibility and achieve its aim only if it enjoys good educational quality (10–12). A review of the current trends in higher education systems shows that higher education should focus on the preservation of and improvements in the quality of education concomitant with attention to the crisis of an increase in quantity and financial restraints (13–17).

The results of the present study showed that the mean grades of the dental students in operative dentistry and endodontics units in the clinic were less than those achieved in the pre-clinic, which might be attributed to the weakness of students that have lingered on from the restorative dentistry and endodontics in the practical lessons of the pre-clinical period, which are manifested during the stages of diagnosis and treatment planning for the patients in the clinic. Another reason for the significant differences in the students grades in the restorative dentistry and endodontics between the clinical and pre-clinical units might be the fact that the endodontics lessons are not presented simultaneous with restorative dentistry lessons and students are engaged in the practical courses at a time when they might not have studied the relevant theoretical lessons and might not be completely familiar with what is discussed in the practical lessons. Therefore it is suggested that at the beginning of the practical courses, the students take an exam as a prerequisite for the practical course to motivate the students for taking part in the practical courses. Other reason for the difference between the grades of the lessons evaluated in the present study might be related to the professors teaching the relevant course and the techniques used to teach or organize them, students' interests in the relevant lessons, the students' self-confidence to render treatment to patients in the clinic and how they establish a relationship with the patients and the patients' cooperation, the harmony between the pre-clinical and clinical programs and finally the effect of the activities carried out in the pre-clinic on the skills and expertise of students in the clinic.

Keeves (1986) is recognized as a researcher who has tried for many years to determine factors affecting institutional learning. Keeves published an analytical report entitled performance cycle, reporting that the initial progress directly affects the final progress (18). Keeves and Larkin (1996), too, carried out a super analysis on projects evaluating the relationship between the final progress in learning with initial progress and reported a significant relationship between the final progress and the initial progress (19).

It is obvious that the students' knowledge level is one of the factors affecting the harmony between the theoretical and clinical education (20–24). The American Supreme Council of Nursing has reported that in order to improve the performance of students in the clinic, there should be a harmony between the theoretical and practical lessons; therefore, there are specific standards that determine the presence of harmony between the practical and theoretical lessons' hours (25).

V. Conclusion

Generally, in the field of medical education, with the dental field being no exception, performance in the clinic is very important. In this context, the bulk of such expertise is achieved in the pre-clinic. Therefore, attention to this period and high-level simulation of working in the clinic can help students promote their clinical performance.

Table 1 The means and standard deviations of the students' grades in the lessons evaluated

Lesson unit Entrance year	Practical restorative dentistry I	Practical restorative dentistry II	Practical endodontics I	Practical endodontics II	Practical fixed prosthodontics I	Practical fixed prosthodontics II
2009	16.62±3.19	16.11±0.74	17.53±1.60	15.90±1.37	16.86±1.49	17.68±1.04
2010	15.93±4.15	15.14±1.32	16.93±1.25	15.68±1.41	15.1±2.02	16.58±2
2011	16.12±1.30	15.53±0.79	16.17±1.41	14.16±1.41	14.19±2.5	17.24±1.74

References

- [1]. Komeili GhR, Rezaei GhA. Study of student evaluation by basic sciences instructors in Zahedan University of Medical Sciences in 2001. Iranian Journal of Medical Education. 2002; 2(1):36-42. [Persian].
- [2]. Farzianpour F, Monzavi A, Yassini E. Evaluating the Quality of Education at Dentistry School of Tehran University of Medical Sciences. Dental Research Journal. 2011; 8(2):71-9.
- [3]. Essani RR, Tazeen AS. Knowledge and practice gaps among pediatric nurses at a tertiary care hospital Karachi Pakistan. International Scholarly Research Network Pediatrics. 2011.
- [4]. Keeves J, Larkin A I. The context of academic motivation. International Journal of Educational Research. 1986; 10(2): 205-213.
- [5]. Danesh kazemi A.R, Davari A.R, Momeni Sarvestani M. Correlation between the scores of dental students in theory and practical restoration courses from 1991 till 2012. The journal of Medical Education and Development. 2013; 8(2): 57-64. [Persian].
- [6]. Adhami A, Haghdoust A A, Khazaeli P, Afzali M. Internal consistency of academic scores as an index of the validity of course exams: A study in Faculty of Pharmacy, Kerman University of Medical Sciences. Strides in Development of Medical Education. 2012; 9(1): 58-64. [Persian].
- [7]. Spickard A, Ahmed T, Lomis K, Johnson K, Miller B. Changing Medical School IT to Support Medical Education Transformation. Teach Learn Med. 2016 Jan-Mar;28(1):80-7.
- [8]. Kinnarsley P, Chenoy R, Westwood OM, Khan KS, Cushing A. Educational effectiveness of gynaecological teaching associates: a multi-centre randomised controlled trial. BJOG. 2016 Jan 18.
- [9]. McCoy L, Pettit RK, Lewis JH, Allgood JA, Bay C, Schwartz FN. Evaluating medical student engagement during virtual patient simulations: a sequential, mixed methods study. BMC Med Educ. 2016 Jan 16;16(1):20
- [10]. Yousefi Mashoof R, Saeed Jam M. Study in quality of education status of medical students in basic sciences courses Hamadan University of Medical Sciences 1989-94. Teb va Tazkiyeh 2002; 45(9): 16-21 [Persian].
- [11]. Motallebnejad M, Bijani A, Isapour R, Ghanbari M. Educational status of dental students at clinical course in Babol Medical University, attended during 1993-96. Journal of Babol University of Medical Sciences. 2003; 5(2): 7-11 [Persian].
- [12]. Aghajani Delavar M, Omidvar Sh. Quality of education in midwifery graduates of admitted students of Babol University from 1992 to 1997. Journal of Babol University of Medical Sciences. 2003; 5(Suppl 2): 62-6. [Persian].
- [13]. Mohammadi A, Mojtahedzadeh R. Information bank and ranking of medical schools in Iran. 1sted. Tehran. Ministry of Health: 2004: 23. [Persian]
- [14]. Kebriaei A, Roudbari M. Quality gap in educational services at Zahedan University of Medical Sciences: Students viewpoints about current and optimal condition. Iranian Journal of Medical Education. 2005; 5(1): 53-60. [Persian].
- [15]. Chen ML, Su ZY, Wu TY, Shieh TY, Chiang CH. Influence of dentistry students' e-Learning satisfaction: a questionnaire survey. Journal of medical systems 2011;35(6):1595-1603.
- [16]. Sorati M, Bazargan A, Hejazi E. The role of different subject materials on the admission of PhD candidates of epidemiology, bacteriology and parasitology during 2006-2007. Rahavard Danesh. 1999; 2(8): 15-22. [Persian].
- [17]. Jotwani P, Srivastav V, Tripathi M, Deo RC, Baby B, Damodaran N, et al. Free-access open-source e-learning in comprehensive neurosurgery skills training. Neurology India 2014;62(4):352-361. International Journal of Educational Reserach. 1986; 10(2): 143-157.
- [18]. Poolton JM, Zhu FF, Malhotra N, Leung GK, Fan JK, Masters RS. Multitask training promotes automaticity of a fundamental laparoscopic skill without compromising the rate of skill learning. Surg Endosc. 2016 Jan 7
- [19]. Bruckel J, Carballo V, Kalibatas O, Soule M, Wynne KE, Ryan MP, Shaw T, Co JP. Use of spaced education to deliver a curriculum in quality, safety and value for postgraduate medical trainees: trainee satisfaction and knowledge. Postgrad Med J. 2016 Jan 6.
- [20]. Whitcomb ME. Transforming Medical Education: Is Competency-Based Medical Education the Right Approach? Acad Med. 2015 Dec 15.
- [21]. Vyas R, Faith M, Selvakumar D, Pulimood A, Lee M. Project-based faculty development for e-learning. Clin Teach. 2016 Jan 18.
- [22]. Holuby RS, Pellegrin KL, Barbato A, Ciarleglio A. Recruitment of rural healthcare professionals for live continuing education. Med Educ Online. 2015 Nov 6;20:258-89.
- [23]. Margolis A, Parboosingh J. Networked Learning and Network Science: Potential Applications to Health Professionals' Continuing Education and Development. J Contin Educ Health Prof. 2015 Summer;35(3):211-9.
- [24]. Shaffer K, Small JE. Blended learning in medical education: use of an integrated approach with web-based small group modules and didactic instruction for teaching radiologic anatomy. Academic radiology 2004;11(9):1059-1070.
- [25]. Haden NK, Andrieu SC, Chadwick DG, Chmar JE, Cole JR, George MC, et al. The dental education environment. Journal of dental education 2006;70(12):1265-1270.