Original Article

Designing and Implementation of a Course on Successful Dental Practice for Dentists

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Abstract

Objectives: We aimed to design, implement and evaluate the efficacy of a comprehensive course on non-clinical competencies that dentists must possess for a successful dental practice.

Materials and Methods: In this interventional before-after study an expert panel of five academic staff members and five general practitioners derived the topics for a course on successful dental practice, and aggregated them in the form of a two-day course. It was held for 46 randomly selected dentists in January 2010, at the School of Dentistry, Tehran University of Medical Sciences. The participants completed an anonymous questionnaire asking about their self-perceived need to receive training in each of the proposed topics and their self-assessed knowledge about each topic before and after attending the course.

Results: Participants gave a higher priority to the necessity of training on "ergonomics and professional health" and communication skills in post-test compared to pre-test ($P<0.05$). The self-assessed knowledge of dentists improved significantly after attending the course in seven domains: ergonomics and occupational health, workplace design, documentation principles and IT applications in dentistry, national rules and regulations of dental practice, medical emergencies, dental ethics and communication skills ($P<0.05$). More than 70% of the participants were completely satisfied or satisfied with practical implication of the course, conformity of the contents with the title and course settings.

Conclusion: The designed course seemed to be successful in revealing the need of participants for further education. Considering the high satisfaction rate of the attendants, this course can serve as a model for continuing education purposes.

Keywords: Practice Management; General Practice; Dental; Dentists

Journal of Dentistry, Tehran University of Medical Sciences, Tehran, Iran (2015; Vol. 12, No. 6)

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Received: 16 August 2014
Accepted: 27 March 2015

INTRODUCTION

In response to the changing needs of the community, dental practice is subject to constant changes. These changes, in turn, influence patient expectations from dentists [1]. To successfully serve the community as a health care professional, dentists must be competent not

only in their clinical practice, but also in some non-clinical aspects of their practice. Previous studies in the United States [2], France [3], the Netherlands [4], and Mexico [5] have shown some deficiencies in non-clinical competencies including legal and financial performance, time and quality management, occupational health and practice organization among dentists and dental students. In order to improve non-clinical competencies of dentists, various approaches have been implemented such as holding educational courses for dental students [6,7], revision of dental curricula [8-10] and holding continuing education programs for dentists [11]. Dentists in Iran are trained based on a national dental curriculum focusing mainly on clinical competencies, with no specific course on non-clinical domains such as professional health, communication skills, practice management or evidence-based dentistry [12]. Moreover, the discipline-based nature of the curriculum acts as a barrier against integrated and comprehensive education. Although the revised national curriculum debuted in 2012 attempts to cover some of the above-mentioned deficiencies, some problems still remain among the practicing dentists. This calls for specific courses in the form of continuing education programs in order to make dentists competent in non-clinical domains of dental practice. In the current study, we designed, implemented and evaluated the efficacy of a comprehensive course on non-clinical competencies that dentists must possess for a successful dental practice.

MATERIALS AND METHODS

This interventional study with a before-after design was performed in the School of Dentistry, Tehran University of Medical Sciences in 2010.

Designing the course:

First, in an expert panel of five academic staff members and five general practitioners, the topics for a course on successful dental practice were derived through a nominal group technique. Based on the consensus of the participants, 12 topics were chosen that are not covered by the national dental curriculum either partially or completely and there was a need for complementary or continuing education courses on them. The course plans for the 12 topics (Table 1) were designed by the expert panel members in the form of a two-day course [13].

Study subjects

In order to acquire an adequate sample, three different sampling approaches were implemented. First, a short message introducing the program was sent to 1000 randomly selected cellphone numbers of dentists practicing in Tehran Province. Second, in the annual congress of general dentists, the course was introduced. Third, the chief dental officers of Tehran city informed the dentists working in health centers about this course. The program was explained to the volunteer dentists. They were invited to participate in the program, which was conducted in January 2010, at the School of Dentistry, Tehran University of Medical Sciences.

Data collection

Based on the derived course topics, a questionnaire was designed to assess the participants' opinion about the necessity of attending the program on each topic for dentists, their self-assessed awareness of each topic and their knowledge of the course contents. Age, sex and work experience (in months) were asked as demographic information of subjects. Some questions regarding the quality and efficacy of the course were also included in the post-test questionnaire.

Self-perceived need:

The participants were asked to express their level of agreement with the necessity to receive training on each topic covered in the course

using a five-point Likert scale from 1 meaning no necessity to 5 meaning maximum necessity.

Self-assessed knowledge:

The dentists were asked to report their knowledge of the course (separately for each topic) using a five-point Likert scale from 1 meaning no knowledge to 5 meaning maximum knowledge.

An anonymous questionnaire was administered among the participating dentists on the first day before commencement of the program as pre-test.

The same questionnaire, with additional questions about the quality and efficacy of the course, was completed by the dentists at the end of the course on the second day. Each participant assigned a three-digit code to the pre-test questionnaire to be re-entered in post-test questionnaire. This enabled assessment of changes separately for each individual.

Statistical analysis

Wilcoxon signed-rank test was used for statistical analysis. Level of significance was set at 0.05.

Table 1. The derived topics and the subheadings of the two-day educational course on successful dental practice for dentists

Topic	Main subheadings
Ergonomics and occupational health	Common physical and mental disorders among dentists, preventive strategies against these disorders, correct postures in dental practice
Workplace design	Dental office/clinic interior design Infrastructure (electricity, pipeline, etc.) requirements for a dental office/clinic
Professional development	Evidence-based dentistry and life-long learning Continuing education and its national regulations
Documentation principles and IT application in dentistry	Documentation of patient information Maintenance of patient records Software programs for documentation and archiving of patient information
National rules and regulations of dental practice	Requirements for practice license Tax regulations Legal responsibilities of dentists Insurance and financing of dental care
Safety	Infection control Waste disposal
Medications and paraclinical referrals in dentistry	Drug prescription Important medications in dental practice and their interactions Important laboratory tests in dental practice and their interpretations
Management of medically compromised patients	Necessary considerations for dental treatment of patients with common systemic diseases
Medical emergencies	Diagnosis and management of medical emergencies occurring in dental office/clinic Necessary drugs and equipment to manage medical emergencies in dental practice
Dental ethics	Professionalism Professional relationship with health professionals Referral and consultation principles
Communication skills	Establishing professional relationships with patients Management of communication problems
Dental instruments and equipment	Principles of dental equipment and instrument selection Troubleshooting of common problems of dental unit and hand pieces Principles of dental material selection

RESULTS

Forty-six dentists with a mean age of 40.8 years (range 25 to 58 years) participated in this study. Nineteen (41.3%) dentists were males. The mean work experience of the participants was 163.3 months (range 10 to 480 months).Table 2 shows the distribution of responses regarding the necessity for training on each specified topic before and after participation in the course. As seen in Table 2, at least two-thirds of the participants in both pre- and post-tests stated that they believed training on all topics was necessary (a score of 4 or 5). In terms of necessity of receiving training on each topic before the course, the highest priority was given to ergonomics and occupational health as 93.4% of the respondents gave a score of 4 or 5 to this topic. The topic with the least priority before the course was workplace design since 67.4% of the participants gave a score of 4 or 5 to this topic. After the course, the most necessary topic was reported to be management of medical emergencies (95.6% gave a score of 4 or 5), and the least necessary topic covered by the training course was documentation principles and IT applications in dentistry (68.9% gave a score of 4 or 5). Before attending the course, less than 40% of the participants assessed their level of knowledge to be high (a score of 4 or 5) about 10 of the 12 topics. However, this value decreased to two topics after the course (Table 3).

Table 2. Distribution of the responses by a group of dentists (n=46*) regarding the necessity of training on each specified topic using a five-point Likert scale from 1 (the least) to 5 (the most) before and after participation in a course on successful dental practice

	Pre-test N(%)						Post-test N(%)					
	0	**1**	**2**	**3**	**4**	**5**	**0**	**1**	**2**	**3**	**4**	**5**
Ergonomics and occupational health	0	0	2(4.3)	1(2.2)	2(4.3)	41(89.1)	0	0	0	3(10.9)	4(8.7)	27(80.4)
Workplace design	0	0	4(8.7)	11(23.9)	9(19.6)	22(47.8)	0	0	2(4.3)	12(26.1)	15(32.6)	17(37)
Professional development	0	0	2(4.4)	4(8.9)	12(26.7)	27(60)	0	0	0	4(8.7)	16(34.8)	26(56.5)
Documentation principles and IT application in dentistry	0	1(2.2)	1(2.2)	11(23.9)	9(19.6)	24(52.2)	0	0	5(11.1)	9(20.0)	14(31.1)	17(37.8)
National rules and regulations of dental practice	0	1(2.3)	4(2.5)	4(9.1)	10(22.7)	27(61.4)	0	0	1(2.3)	6(13.6)	14(31.8)	23(52.3)
Safety	0	0	0	6(13)	5(10.9)	35(76.1)	0	0	1(2.2)	2(4.4)	4(8.9)	38(84.4)
Medications and paraclinical referrals in dentistry	0	0	1(2.2)	10(21.7)	4(8.7)	31(67.4)	0	0	2(4.4)	6(13.3)	11(24.4)	26(57.8)
Management of medically compromised patients	0	0	0	8(17.8)	6(13.3)	31(68.9)	0	0	1(2.2)	4(8.7)	9(19.6)	32(69.6)
Medical emergencies	0	0	0	3(6.7)	10(22.2)	32(71.1)	0	0	0	2(4.4)	3(6.7)	40(88.9)
Dental ethics	1(2.2)	0	6(13)	6(13)	11(23.9)	22(47.8)	0	1(2.2)	2(4.4)	10(22.2)	8(17.8)	24(53.3)
Communication skills	0	0	2(4.3)	7(15.2)	11(23.9)	26(56.5)	0	0	1(2.2)	5(11.1)	9(20)	30(66.7)
Dental instruments and equipment	0	0	0	8(17.4)	9(19.6)	29(63)	0	0	0	10(22.2)	7(15.6)	28(62.2)

*: The maximum number of unanswered questions was 2.

The opinion of the participants regarding the necessity of receiving training on two topics significantly changed after the course and they gave a higher priority to ergonomics and professional health and communication skills in post-test compared to the pre-test (P<0.05) (Table 4). The self-assessed knowledge of the dentists improved significantly after attending the course on seven topics including the ergonomics and occupational health, workplace design, documentation principles and IT application in dentistry, national rules and regulations of dental practice, medical emergencies, dental ethics and communication skills (P<0.05) (Table 4).

Regarding the quality and efficacy of the course, more than 70% of the participants were completely satisfied or satisfied with practical implication of the course, conformity of course contents with the title and course settings. Moreover, 87% of the participants completely agreed or agreed that more training in this field was required.

DISCUSSION

In the present study, a course on successful dental practice was designed and its effect on self-assessed need for training and self-assessed knowledge in this regard was investigated through a before-after design.

Table 3. Distribution of the responses by a group of dentists (n=46*) regarding the self-assessed knowledge about each specified topic using a five-point Likert scale from 1 (the least) to 5 (the most) before and after participation in a course on successful dental practice

	Pre-test N(%)						Post-test N(%)					
	0	**1**	**2**	**3**	**4**	**5**	**0**	**1**	**2**	**3**	**4**	**5**
Ergonomics and occupational health	1(2.2)	4(8.9)	8(17.8)	19(42.2)	10(22.2)	3(6.7)	0	1(2.3)	5(11.6)	10(23.3)	19(44.2)	8(18.6)
Workplace design	1(2.2)	4(9.1)	13(29.5)	14(31.8)	11(15)	1(2.3)	0	0	7(16.7)	16(38.1)	15(35.7)	4(9.5)
Professional development	0	1(2.3)	8(18.2)	22(50)	12(27.3)	1(2.3)	0	0	6(14.3)	14(33.3)	15(35.7)	7(16.7)
Documentation principles and IT application in dentistry	0	1(2.2)	4(8.7)	18(40)	7(15.6)	2(4.4)	0	4(9.8)	8(19.5)	14(34.1)	12(29.3)	3(7.3)
National rules and regulations of dental practice	0	7(15.6)	18(40)	8(17.8)	11(24.4)	1(2.2)	0	2(5.1)	11(28.2)	12(30.8)	12(30.8)	2(5.1)
Safety	0	0	1(2.2)	7(15.6)	28(62.2)	9(20)	0	0	0	7(16.7)	24(57.1)	11(26.2)
Medications and paraclinical referrals in dentistry	0	2(4.4)	4(8.9)	23(51.1)	14(31.1)	2(4.4)	0	1(2.5)	3(7.5)	17(42.5)	15(37.5)	4(10)
Management of medically compromised patients	0	2(4.4)	6(13.3)	24(53.3)	11(24.4)	2(4.4)	0	3(7.5)	3(7.5)	17(42.5)	12(30)	5(12.5)
Medical emergencies	0	3(6.7)	13(28.9)	20(44.4)	8(17.8)	1(2.2)	0	5(11.9)	1(2.4)	15(35.7)	15(35.7)	6(14.3)
Dental ethics	0	0	8(17.8)	15(33.3)	18(40)	10(22.2)	0	0	1(2.4)	11(26.8)	21(51.2)	8(19.5)
Communication skills	0	0	2(4.4)	15(33.3)	18(40)	10(22.2)	0	0	3(7.1)	10(23.8)	19(45.2)	5(23.8)
Dental instruments and equipment	0	0	5(11.1)	22(48.9)	16(35.6)	2(4.4)	0	0	5(11.6)	12(27.9)	18(41.9)	10(23.8)

*: The maximum unanswered questions was 2 in pre-test and 7 in post-test.

The course mainly focused on non-clinical competencies that a general dentist should possess. The results showed that the course was successful in a short-term evaluation. Designing a comprehensive course covering a wide range of topics related to successful dental practice, focusing on weaknesses of the national dental curriculum and implementing the views of the dentists as the main stakeholders in designing the course [13] can be considered as the strengths of our study. On the other hand, lack of a control group, short-term evaluation and using a questionnaire for the course evaluation were weaknesses of our study. However, with regard to the fact that no similar course in Iran or elsewhere was found, designing such a course per se was one of the main goals, which was achieved. A study aiming to explore important aspects of practice and patient management among dental residents and their views on the level of undergraduate training regarding these subjects was done in the United States [2].

The results showed that the most important topics included time management, multidisciplinary coordination and total quality management. Respondents considered dealing with health care payers to be important to their future practices while this topic received low priority in their curriculum [2].

Another study in France on senior dental students who had the experience of working as associates in dental offices as a part of their undergraduate training showed that the two most reported problems included time management (90%) and administrative matters (85%) [3]. A study in the Netherlands on newly qualified dentists showed that the most frequently reported factors responsible for being unprepared for practice were law and insurance matters (61.2%), practice organization (56.6%) and staff management (55.2%) [4]. In our study, ergonomics and professional health received the highest priority in self-perceived educational needs expressed by dentists.

Table 4. Comparison of pre- and post-teat scores of self-perceived need for education and self-assessed knowledge about each specified topic among a group of dentists (n=46) attending a course on successful dental practice

	Self-perceived need		**Self-assessed knowledge**	
	Z statistic	**P***	**Z statistic**	**P***
Ergonomics and occupational health	-2.33	0.02	-3.28	0.001
Workplace design	-0.51	0.6	-3.53	<0.001
Professional development	-0.44	0.65	-2.74	0.06
Documentation principles and IT application in dentistry	-1.22	0.22	-2.33	0.02
National rules and regulations of dental practice	-0.02	0.98	-2.88	0.004
Safety	-1.29	0.19	-0.65	0.51
Medications and paraclinical referrals in dentistry	-0.79	0.43	-1.55	0.12
Management of medically compromised patients	-0.67	0.49	-1.68	0.09
Medical emergencies	-1.57	0.11	-2.98	0.003
Dental ethics	-1.1	0.26	-2.85	0.004
Communication skills	-2.33	0.02	-2.04	0.04
Dental instruments and equipment	-0.97	0.33	-1.95	0.05

* Wilcoxon signed-rank test

This finding confirms the studies reporting the high prevalence of musculoskeletal disorders among dentists [14-16] and emphasizes on providing the dentists with sufficient training in this regard, similar to previous studies [17, 18]. The second important topic according to the dentists' perspectives was management of medical emergencies in the dental office. This is in line with previous studies in Iran [19-21] and other countries [22-24] calling for more emphasis on this topic in undergraduate dental curricula and continuing education programs.

Moreover, only 19.6% of the participants reported to have sufficient knowledge on this topic. More than 80% of the dentists reported insufficient knowledge about this topic and also workplace design. The latter, however, was ranked the last priority for further education. This shows that although the dentists rated their self-assessed knowledge as low on this topic, they gave a lower priority to further education on this topic compared to other topics.

However, it should be noted that more than two-thirds of the dentists felt that there was a need for more training even on this topic. In general, these findings show the deficiency of the national dental curriculum and continuing education programs in non-clinical aspects of dental practice. In seven out of 12 topics, the self-perceived need for education increased after attending the course. This increase was significant in ergonomics and professional health and communication skills, showing that the course successfully revealed the need for further education among the participants. After the course, the self-assessed knowledge about all topics increased. This increase was significant for seven of the 12 topics, showing that the course in general was successful in enhancing the self-assessed knowledge of the dentists in short-term. The respondents also believed that the course was successful as most of them were satisfied with the course content and conduction. Since no similar course has been reported in previous studies, it was impossible to compare our results with those of other studies. Studies on educational interventions covering some of our topics for dental students [6,7,25] have reported positive results in increasing the knowledge and improving the attitudes of the participants.

CONCLUSION

In conclusion, a need for more training on non-clinical domains of dental practice was evident among the dentists. The designed course seemed to be successful in revealing the participants' need for further education. With regard to the satisfaction rate of the attendants, this course can serve as a model for continuing education purposes for dentists.

ACKNOWLEDGMENTS

This research was supported by a grant from Tehran University of Medical Sciences and Health Services (grant no. 89-01-70-10207). Our special thanks go to Dr. Ahmad Jafari, Dr. Leila Seddighpour, Dr. Hossein Hessari and Dr. Mohammad J. Kharrazifard for their constructive support.

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