

Original Article

Continuing professional development programs for general dentists in Isfahan province, Iran: Interests, priorities, and obstacles

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ABSTRACT

Background: Continuing professional development (CPD) is a life-long learning process for all health-care members including dentists to improve their knowledge and skills in their profession and provide the best quality services. This study aimed to assess the needs, priorities, and obstacles of attending dentists in these programs in Isfahan province, in 2020.

Materials and Methods: This descriptive-analytical cross-sectional study was performed on general dentists in Isfahan province. Data were collected through a three-part questionnaire, online and on paper; it included demographic information, prioritization of seven disciplines, and scoring of 33 dental subfields, as well as obstacles limiting participation in the CPD programs. This questionnaire was developed and validated by researchers. Statistical analysis was carried out through Mann–Whitney, Kruskal–Wallis, and Chi-square tests, and a significance level of 0.05 was considered.

Results: Of 326 dentists (90.5% response rate) participating in this study, 157 were (48.2%) female, and most of them were in the high work experience group (45.1%). The highest mean scores standard deviation related to the dentist's interest and needs, among the seven dental disciplines, belonged to practice management (6.68 [2.9]), oral and dental reconstruction (6.29 [2.55]), and pediatric dentistry (6.29 [2.87]). On the other hand, lack of time (70.6%), inefficient teaching methods and organization (65%), and irrelevant topics (58.6%) were the most common obstacles limiting dentists in the CPD programs.

Conclusion: Based on the results of this study, dentists in Isfahan province reported more interest and need to participate in some fields of CPD courses including practice management, pediatric dentistry, and oral and dental reconstruction. Thus, a system for continuing education based on dentists' needs and preferences is highly suggested.

Key Words: Continuing dental education, dentists, health priority, need assessment

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INTRODUCTION

Continuing professional development (CPD) is a life-long learning process for all individuals to improve their knowledge and skills in each profession and to apply them in their everyday

work.^[1-4] In the dental profession, due to the advancement of science, technology, and treatment methods, dentists should be encouraged to enhance their level of knowledge and skills to provide the best quality services.^[5-9]

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In most countries, there is no comprehensive system of educational planning for CPD based on adult learning theories and learners' needs assessment. Therefore, the choice of educational topics, teaching methods, and content presentation is more individualized and based on the tastes of companies and host institutions. Without knowledge of dentists' training history, weaknesses and needs, CPD is unable to compensate for their knowledge gaps. In this regard, it may be advantageous to involve dentists throughout the process; this could range from assessing CPD needs to planning, implementing, and evaluating.^[10] Meanwhile, in the European Union countries, an integrated research-based system has been created to decide on the mandatory topics and recommended ones for graduated dentists following the assessment of their needs and interests.^[2] Therefore, this continuing education (CE) system can enhance the participation and motivation of dentists, improve the quality of output from programs, and prevent the participation of dentists in expensive courses.

Despite the good opportunity for dentists to obtain the required CE credits to issue and renew their employment license in Iran, there is no regular system for medical community CPD to suggest their preferred or necessary topics. Given all of the above, this study was designed to examine the needs, priorities, and obstacles limiting general dentists' participation in CE programs in Isfahan province, Iran.

MATERIALS AND METHODS

This descriptive cross-sectional study, was approved in research and ethics committee of Isfahan (NO:398672). Enrolled among the dentists working in private and public clinics, and offices of Isfahan province, as registered in the Medical System Organization, with at least 3 years of work experience. Out of about 1700 general dentists in Isfahan province, 360 were counted as the sample size for this study. This was according to the limited sample and stratified sampling method, with $d = 0.17$, $\sigma = 1.66$, the 95% confidence intervals and the design effect of 1.2.

At first, a data collection tool was designed based on item pooling about the "priorities, preferences and needy topics in dentistry CPD" from the previous studies in this field in the European Union countries,^[7] Ireland,^[11] and India.^[1] After forward-backward translation, the content and face validity, and the

reliability of the instrument was assessed by the opinions of an expert panel. The minimum content validity ratio (CVR) in the panel of 22 participants with an error of 0.05 was equal to 0.395.^[11] Therefore, after calculating CVR for each sub-category based on the opinion of 10 dental professors in Isfahan Dental School and 12 general dentists, 26 of them were eliminated as they were less than the noted cut-off. The final draft included seven disciplines and 33 subcategories.

The next phase was to distribute the questionnaires and data gathering. The final questionnaire consisted of three parts; Part I was related to demographic and professional information of dentists, including age, gender, university and year of graduation, practice period, practice type (private office, private/public clinic), and the frequency of attendance in CE programs (once every 6 months, once a year, once every 2 years, rarely). In the second part, first, dental science was divided into seven disciplines including oral diseases/surgery, practice management (office/clinic), pediatric dentistry, oral and dental reconstruction in dentistry, preventive dentistry, orthodontics, and dentistry for people with mental and physical disabilities. The participants were then requested to define their expressed need and interest in topics related to CE programs, based on the visual analog scale scale; this ranged from 0 (the least need and interest) to 10 (the most need and interest) on the relevant numerical axis.^[1,12,13] Participants' responses on the number axis were measured as integers at the point they were marked with an accuracy of 1 mm. In the third part, the barriers limiting participation in these programs were addressed; these included lack of time, loss of income, program costs, interference with family programs, irrelevant topics in these programs, remote locations, and inefficiency of teaching and holding methods. This questionnaire was prepared electronically (Google form), and the access link was sent to the dentists via text message. Due to the lack of sufficient answers, questionnaires were sent to dentists through virtual pages, including telegram groups. As an alternative method for data collection, a paper questionnaire was provided to some dentists by the researcher at their offices.

The final phase was data processing. The obtained data were entered into IBM SPSS Statistics for Windows, version 21 (IBM Corp., Armonk, N.Y., USA) software and descriptive analyses (frequency percentage) were performed to report the data. Mann-Whitney test

was then used to examine the relationship between gender and the need in each discipline. The length of the practice period was converted into a three-state ranking variable; then its relationship with the need in each discipline was tested by the Kruskal–Wallis test. Furthermore, the relationship between gender and practice period and the obstacles limiting participation in CE programs was assessed by conducting the Chi-square test.

The study was approved at the ethical committee with the code: 1398.517IR.MUI.RESEARCH.REC. It was noted as a cover letter showing that participation in this study was voluntary. Furthermore, the information related to the participants remained confidential.

RESULTS

Out of 360 invited dentists, 338 (93.8% response rate) participated in the study; of these, 12 were excluded due to the low work experience. Of the remaining 326, 157 (48.2%) were female.

The mean age group for the whole study population was 40.86 and an standard deviation (SD) of 10.02. Dentists' work experience was divided into three groups: short (3–8 years), medium (9–15 years), and long (15 years and above). Most of them (45.1%) were in the group with a long work experience. Other demographic information, including the university where they graduated, the year of graduation, practice type, and frequency of attendance in CE programs, can be seen in Table 1.

General dentists reported their needs and interests in 33 subcategories, with the mean score being in the range of 5.01–7.21; most of this was related to occupational health and safety, while the least referred to head-and-neck malignancies. As shown in

Figure 1, in regard to oral medicine/surgery, each of the subcategories mentioned by dentists was scored from 0 to 10 in terms of interest and need, which was the highest mean SD score obtained in regard to the radiographic interpretation and legislation (6.53 [3.1]); this was followed by pharmacology (6.24 [3.2]). In oral and dental reconstruction, the highest mean SD score was related to anterior restorative/cosmetic dentistry (7.15 [3.22]), and this was followed by new methods of root canal therapy (7.02 [3.26]). The highest mean score SD in the field of orthodontics belonged to interceptive orthodontics (5.87 [3.47]). Occupational health and safety (7.21 [3.23]) and infection control (7.03 [3.25]) had the highest mean score SD in practice management. In pediatric dentistry, the highest mean SD among the sub-categories was related to the root canal therapy for open apex teeth (6.44 [3.26]); this was followed by behavioral management (6.42 [3.14]). In preventive dentistry, prevention topics (6.12 [3.27]) followed by fluoride guidelines (5.73 [3.18]) had the highest mean score SD. Dental considerations for the elderly (5.7 [3.03]) had the biggest mean SD in dentistry for people with mental and physical disabilities.

The mean scores SD related to the need and interest in different disciplines for each person were obtained by dividing the total scores of the subcategories by their number. As a result, the first, second, and third priorities of the dentists based on their interests and needs were practice management (6.68 [2.93]), oral and dental reconstruction in dentistry (6.293 [2.55]), and pediatric dentistry (6.291 [2.87]), respectively.

Lack of time, inefficient teaching methods and organization, and irrelevant topics were the most important obstacles limiting CE programs [Figure 2], as reported by the participants. Accordingly, a small number of people reported the loss of practice time to earn money as a barrier to participation in programs. The questionnaire showed a significant and positive relationship between frequency, the programs cost ($P < 0.001$), the irrelevant topics ($P < 0.05$), and inefficient teaching methods and organization ($P < 0.05$) and gender. The higher proportion of women considered them as barriers. A significant association was also seen between loss of income and practice time ($P < 0.001$). Hence, half (50.9%) of those with short work experience (from 3 to 8 years) considered this a barrier. Likewise, there was a significant and positive

Table 1: Demographic characteristics of the participating general dentists (n=326)

Demographic variables	n (%)
Graduation year	
1977-2001	126 (38.7)
2002-2017	200 (61.3)
Practice type	
Private offices	114 (35.5)
Public clinics	122 (38)
Both	88 (26.5)
Frequency of attendance	
Twice a year	188 (58.1)
Once a year	88 (27.3)
Once in 2 years/rarely	47 (14.6)

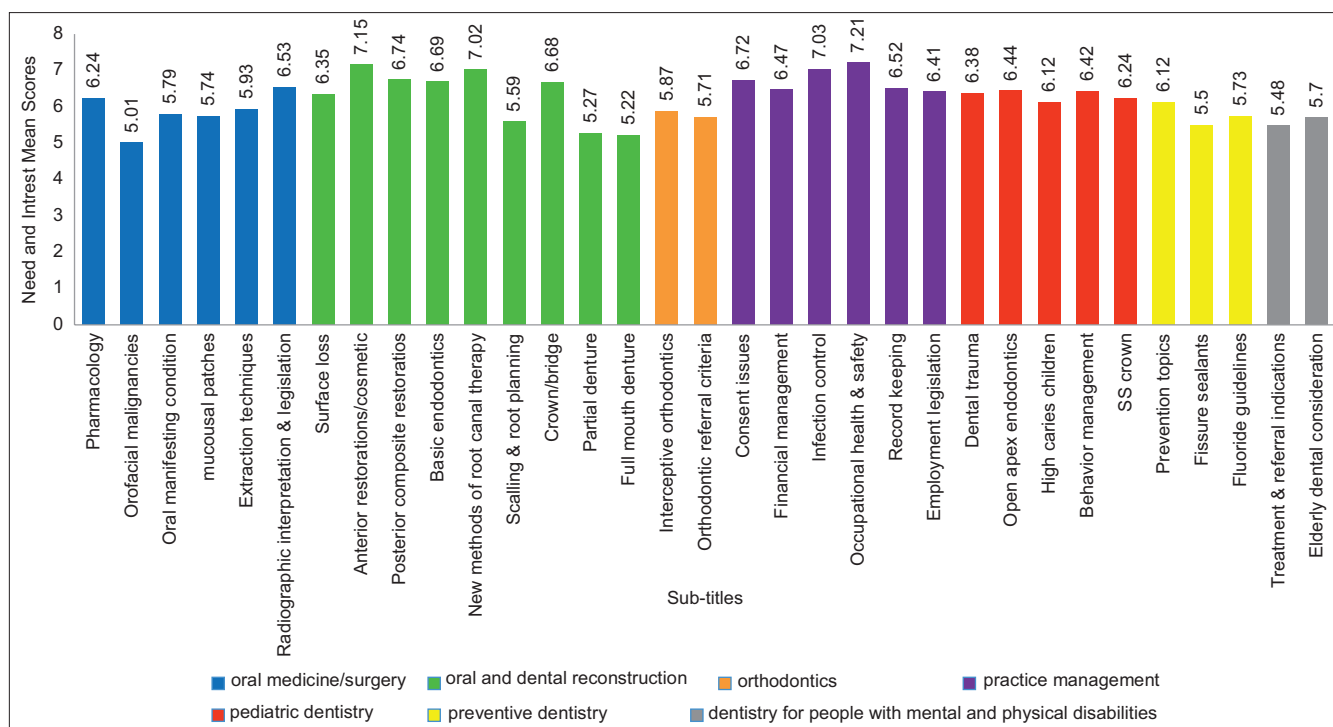


Figure 1: Mean scores related to the need and interest of general dentists in 7 disciplines of dentistry in Isfahan province (range: 0–10).

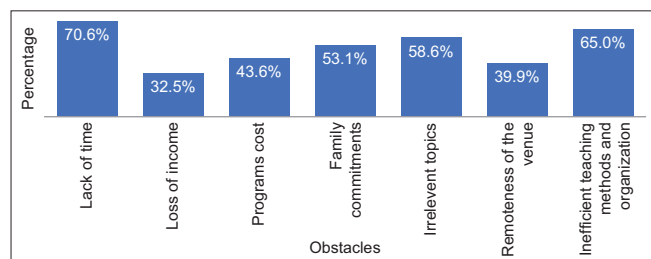


Figure 2: Frequencies of the reported obstacles for the participants in continuing education programs, as reported by general dentists in Isfahan province.

relationship between the cost of participation in programs and the remoteness of the venue, and the amount of work experience ($P < 0.001$); more than half of dentists (57%) with short work experience reported this barrier.

The results obtained by conducting the Kolmogorov–Smirnov test showed that the distribution of the need and interest scores in seven dental disciplines in regard to CE programs was not normal. There was a significant and positive relationship between three disciplines of pediatric dentistry ($P < 0.001$), preventive dentistry ($P < 0.05$), and dentistry for people with mental and physical disabilities ($P < 0.05$) and gender. In these three disciplines, the mean score was higher in women, as compared to men. Only a positive and significant relationship was shown

between dentists’ work experience and the discipline of oral diseases/surgery ($P < 0.05$). Hence, people with long work experience (above 15 years), as compared to the group with medium work experience (from 9 to 15 years), expressed more need and interest in these disciplines rather than others.

DISCUSSION

CPD is one of the most important components of any medical education system. Keeping up with the latest science, skills, and experiences for dental professions is inevitable for the rapid regeneration of the health sciences.^[8] Obviously, the cornerstone of an effective continuing professional education program is determining the specific targets and planning based on the needs of the audience.^[10]

In the study conducted for the needs assessment and prioritization of areas in dental CE programs in Isfahan province, three disciplines of practice management (office/clinic), oral and dental reconstruction, and pediatric dentistry were among the top priorities. In the present study, practice management was the most important preference amongst dentists, while in Nazir *et al.*, Nayak *et al.*, Chan *et al.*, and Khanehmajedi *et al.* (2009), cosmetic dentistry and tooth-colored restorations were

in the first rank.^[1,5,9,14] Practice management is the key to become a successful leader in a dental team setting.^[15] It can be achieved through experience, but this approach is time-consuming and may have unpredictable and costly errors. Hence, it is better to include this course in the dental education curriculum from the beginning.^[16] As shown by a study in the United States, as well as one in the UK, practice and business management was an area highlighted to be included in the existing curricula by both new graduates and experienced practitioners.^[16,17] Another study in the United States compared practice management curricular changes within 5 years, indicating improvement in all aspects of practice management courses by adding new teaching methods, topics, and simulation technology, along with MBA dual degree programs. The purpose of these changes was to train dental students to start their careers wisely and to be aware of employment laws and financial issues.^[18] This study, in line with another study conducted in Iran by Makarem *et al.*, showed that practice management was missing in the Iran educational curriculum.^[19] Occupational health and safety, infection control, patient satisfaction subjects, patient record keeping, and employment legislation are the areas in need of more attention in CE programs. In a study done among 10 Canadian dental universities, 22 practice management courses were taught in different years of dentistry, resulted that top three topics were ethics, human resource management, and running a private practice.^[20] According to Sager's study, (2005) along with clinical courses, soft skills such as practice and financial management are important as well. Since patient satisfaction could be reached by acceptable level of management.^[21]

In the present study, anterior teeth restorations and cosmetic dentistry, followed by new methods in endodontic treatment, were the second and third preferences among the designated sub-categories, respectively. Given the importance of the mouth and teeth in the appearance of people and its effect on their self-confidence and quality of life, cosmetic dentistry has received more attention by people; so, it is crystal-clear that dentists are looking for new treatments as a way to change the teeth appearance as a high demand of their patients.^[22] Furthermore, the progression of social media appears to be a new and impressive driving force for esthetic dentistry.^[23,24]

Regarding the obstacles, as in the case of Nayak *et al.* and Nazir *et al.*, lack of time was the main barrier limiting participation in CE programs, which was in line with our study.^[1,5] Lack of time can be due to continuous work for the whole week. In our study, Obstacles such as programs participation cost, irrelevant topics, inefficient teaching methods, and organization for women were more likely to be selected as the barriers. About half of those with short work experience found that the loss of income prevented them from participating in programs, which could be due to a fresh start in dentistry and the importance of earning money during this period.

CE will be effective and have useful results in the patients and the community if it is designed based on the principles of adult learning including involving in learning and evaluation, experiencing, and having an immediate and relevant impact on people's jobs or personal life.^[25] Ultimately, adult learning should be problem-based, not content-based.^[26] While, there is no established integrated system to assess the needs and plans for CE programs based on the needs and interests of dentists in Iran, the result of this study would help start such systems.

CONCLUSION

This article provides an overview of the general dentist's interests and priorities in CE in dental. Dentists in Isfahan province reported more interest and need to participate in some courses including practice management, pediatric dentistry, and oral and dental reconstruction. Lack of time, inefficient teaching methods and organization, and irrelevant topics were the most common obstacles. The results of this study are presented for better planning of CE programs purposefully to improve the knowledge and skills of dentists. This study can be the beginning of further researches, addressing a wider range of dental topics, along with different teaching methods in CE programs. The ultimate goal will be the establishment of CE program based on the real and updated dentists' need.

Limitations

First, there is no comprehensive needs assessment tool for CE programs in Iran, which was the cause of developing the data collection tool. Due to the diversity and differences of the available studies, it was not possible to focus on more detailed topics. Furthermore, in regard to the lack of dentists' online

participation and the prevalence of COVID-19, lack of access to dentists, data collection was difficult.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Conflicts of interest

The authors of this manuscript declare that they have no conflicts of interest, real or perceived, financial or non-financial in this article.

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