

## Continuing education needs as reported by dentists in Saudi Arabia

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وزع استبيان على ٣٥٠ طبيب أسنان في ثمان مدن متفرقة في داخل المملكة العربية السعودية لدراسة الحاجة إلى برامج التعليم المستمر لأطباء الأسنان العاميين.

استجاب ٢٩٨ (٨٥,١%) طبيب نسبة السعوديين بينهم كانت (٥٢,٤%)، فيما كان (٤٧,٦%) من جنسيات مختلفة. ٥٩,٢% من الذكور، ٤٠,٨% من الإناث، معظم أطباء الأسنان السعوديين العاميين كانوا قد تلقوا دراستهم في جامعة الملك سعود (٨٨,٨%) أو جامعة الملك عبد العزيز (٩,٨%)، ٤٦% منهم شاركوا في واحد أو اثنين من برامج التعليم المستمر خلال السنتين الماضيتين، الخسيس والسبت هي من أيام الأسبوع المفضلة للمشاركة في هذه البرامج. أوضحت النتائج على أن التوجه في التعليم المستمر للأطباء العاميين كانت حسب الأفضلية كالتالي: علاج الحالات السننية والطبية الطارئة ٧٧%، الزراعة ٧٦%، والأطفال ذوي الأسنان المختلط المبكر ٧٤%.

المواضيع الأقل اهتماما للدراسة كانت الترميم بالحشوات الفضية (الأملمع) وتحضير الأسنان ٤٠%، أخذ المقاسات ٤٠%، علاج اللثة ٤٠%، فحوى هذا الموضوع هو لفت انتباه القيمين على هذه البرامج لتقديم المواضيع الأكثر قبولا واستحسانا من قبل أطباء الأسنان العاميين في المملكة العربية السعودية.

الحصول على الحد الأدنى من الساعات في برامج التعليم المستمر يجب أن يطبق كشرط أساسي للحصول على ترخيص مزاولة المهنة في المملكة العربية السعودية.

A questionnaire was distributed to 350 general dental practitioners (GDPs) in eight urban cities in the Kingdom of Saudi Arabia to determine their need for continuing education. Two hundred and ninety eight (85.1%) responded of whom 52.4% were Saudis, and the remaining 47.6% were of different nationalities. Males were 59.2% while 40.8% were female dentists. Most of the Saudi GDPs received their training either at King Saud University (88.8%), or King Abdullaziz University (9.8%). Of the respondents, 46% attended only one or two continuing education courses during the preceeding two years. Thursday and Saturday were the most preferred days of the week to attend continuing education courses. The results indicated that the top three continuing education learning needs were dental and medical emergencies (77%), implants (76%) and early mixed dentition treatment (74%). The least attractive continuing education learning needs were amalgam restorations and tooth preparation (40%), impression procedures (40%), and therapeutic periodontal instrumentation (40%). The data from this study pointed out strongly that continuing education sponsors should plan course offerings more meaningfully and these courses should fulfill the needs and aspirations of the GDPs in Saudi Arabia. Specified minimum hours of mandatory continuing education should be considered as a requirement for relicensure in the Kingdom.

### Introduction

It has become widely recognized that curriculum planning in any phase of education should begin with research.<sup>1,2</sup> This is particularly true in continuing dental education, where the dentist is generally able to select the subject matter, the instructor, and the frequency of his or her participation. No other phase of education is as dependent on the preferences of the learner. Mandatory continuing education may alter this situation slightly, however. At present, irrelevant continuing education offerings that are canceled at the last minute or poorly attended waste time, money, and human resources.

The assessment of needs is an integral part of program planning in continuing education. Ideally, it is both the beginning and the end of a planning process. First, it formulates the learning objectives and then it measures whether the needs have been met through the learning activities. Basically, two types of learning needs can be measured.<sup>3</sup> Real need - an existing

deficiency in an individual, group, institution, or community. It may or may not be recognized by those who have the need, and it is usually determined at least in part by an objective observer. Felt need - a deficiency perceived by a person, group, or institution. It usually indicates educational preferences and is connected with a high level of motivation. It may or may not be a real or educational need. Felt or perceived needs in dental health care, for example, may best be identified through questionnaires or interviews with the potential course participants, whereas real needs may best be identified through strategies that include objective evaluation, such as audits, testing of performance, and observations of patients. Several studies have used questionnaires to determine perceived needs of dentists regarding continuing education.<sup>2,4,8,11</sup>

Bauer and Bush,<sup>4</sup> determined those other factors such as tuition, lodging expenses, distance from home, and course length which influenced demand for continuing education courses. Other studies conducted in various regions of the United

Received 9 Sept. 2000; Revised 22 Nov. & 11 Dec. 2000

Accepted 6 Jan. 2001

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States and Europe have shown a variety of topic preferences for continuing dental education.<sup>3,5-11</sup> Dental office emergencies were the topics most frequently requested by dentists in South Carolina U.S.A and in the Thames region in southeast England.<sup>8</sup> Operative dentistry was most requested in North Carolina and New York.<sup>7,9</sup> Other top-rated topics have included preventive dentistry, endodontics, and crowns and bridges.<sup>5,6,10</sup>

Dentistry in Saudi Arabia is rapidly developing in quantitative and qualitative care. However, to date there are no published data that specifically deal with the perceived needs of the Saudi Arabian general dental practitioners for continuing education courses (CEC). Such data when available will facilitate efforts through continuing education in dentistry in the Kingdom of Saudi Arabia to upgrade the skills of all dentists regardless of their background. The development of an ongoing validated survey instrument will contribute to the defining of needs of continuing education courses for general dental practitioners in Saudi Arabia, and, by extension, in the Arabian Gulf countries. It is presumed that these other countries may also be interested in starting continuing education courses for their general dental practitioners. The survey instrument will provide information on what a model program for the new age dental technology should be.

In order to develop more realistic course offerings for members of the dental profession, a survey was conducted to help determine the perceived needs of dentists in Saudi Arabia. A needs-assessment questionnaire was constructed to obtain demographic data on the dentist population, to assess dentists attendance at continuing education courses, determine scheduling of learning activities, and to identify the priority ranking by topic or content.

### Materials and Methods

A nine-page self-administered questionnaire with a separate covering letter explaining the purpose of the assessment was distributed to 350 dentists who were randomly selected in eight major cities within the Kingdom namely Riyadh, Jeddah, Mecca, Madinah, Tabouk, Dammam, Alkhubar, Aldahran. The needs-assessment questionnaire was developed through review of relevant literature and nationwide continuing dental education programs.<sup>2,4-6</sup> It was field tested in a pilot study on a group of dentists in Riyadh, and appropriate revisions were incorporated. The questionnaire was distributed between December

12, 1996 and January 10, 1997.

General dental practitioners in Saudi Arabia were classified into two groups. Group 1: Saudi general dental practitioners who graduated from either of the two dental colleges in the Kingdom, or colleges outside the Kingdom. Group 2: Non-Saudi general dental practitioners from different countries with a variety of undergraduate and graduate learning experiences and expectations.

The survey instrument had two parts. Part I listed seven main questions including demographic data, the background of the individual and other data like learning preference such as the scheduling. Part II listed 60 clinical dentistry topics. For each question, need was rated on a 4-point scale, with one representing "no need" and 4 representing "critical need". Open-ended items were also included. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) and State View computer software.

### Results

#### Demographic data

Two hundred and ninety-eight of the 350 general dental practitioners surveyed responded. Saudi respondents were 156 (52.4%) while the remaining 142 (47.6%) were from different nationalities. Males who responded were 173 (59%) while the females were 119 (41%). Among the foreign dentists, Egyptians constituted the majority accounting for 60.7%. Most of the Saudi general dental practitioners received their training either at King Saud University (136 [88.8%]), or King Abdullaziz University (15 [9.8%]). Two Saudis received their training in foreign dental schools. The non-Saudi dentists received their dental education in a diverse number of dental schools. Of the non-Saudi respondents, 38% reported that they had their professional training in Cairo University, 22% in Alexandria University, and others (40%) in different universities worldwide.

Although the year of graduation of the respondents ranged from 1963 to 1996, 137 (50%) graduated between 1990 and 1996, 105 (38%) between 1980 and 1989, and the remaining 31 (12%) graduated between 1963 and 1979.

In response to the question "Where do you practice dentistry?", 101 (35%) responded "Private clinics". Others were in primary 89 (31%), secondary 28 (10%), and tertiary 71 (24%) care clinics. Regarding the question on "the years of administration if applicable", 33 (11%) responded

positively, 39% (13) of whom had at least one year administrative experience. One respondent had nineteen years of administrative experience.

In response to the question "How many continuous education courses did you attend during the last two years?", 80 (31%) attended more than four, while 116 (46%) attended only one or two courses during the preceeding two years as shown in Table 1.

**Table 1.** Attendance at continuing education courses in the last two years.

Response	n	%
One	64	25
Two	52	21
Three	39	15
Four	21	8
More than four	80	31
Total	256	100

In response to the question " Which day of the week do you prefer to attend a continuous education course?", 96 (33%) preferred Thursday followed by Saturday 78 (26%).

#### Academic deficiencies data

Almost half of the general practitioners responded "No" or "Little" need to removable prosthodontics course as shown in Table 2. There was quite strong support (150 [53%]) for "Jaw Relation" as it relates to removable prosthodontics with a mean value of 2.57. "Examination and Treatment planing" and "Partial denture design" showed almost equal need, while there was only a minimal need for "Full dentures" and "Impression procedures" with a low mean value of 2.28 and 2.24 respectively, as shown in Table 2.

Table 3 showed the response to Fixed prosthodontics. "Laboratory procedures", "Bridge design", "Porcelain fused to metal restorations", and "Tooth preparation", were reported as needed by more than half of the respondents. "Tissue management"; and "Temporary restoration and cementation" had less interest.

The third competency area was Operative dentistry (Table 4). "Esthetic consideration in operative dentistry" was viewed as a definite need; as was "Retentive pins in operative dentistry". There was minimal interest among the respondents toward "Biologic aspects of operative

**Table 2.** Response to Removable Prosthodontics continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Jaw relations	23%	24%	26%	27%	2.57
Partial denture design	18%	34%	31%	17%	2.47
Examination & treatment planing	24%	28%	26%	22%	2.46
Overdentures	19%	37%	28%	16%	2.41
Try-in	28%	28%	24%	20%	2.36
Insertion & delivery	30%	27%	20%	23%	2.36
Full dentures	25%	34%	29%	12%	2.28
Impression procedures	32%	28%	24%	16%	2.24

**Table 3.** Response to Fixed Prosthodontics continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Laboratory procedure	17%	27%	28%	28%	2.67
Bridge design	17%	27%	32%	24%	2.63
Porcelain fused to metal restorations	21%	25%	25%	29%	2.62
Tooth preparation	26%	21%	19%	34%	2.61
Pontic design	18%	32%	34%	16%	2.48
Partial veneer crown	14%	38%	34%	14%	2.48
Impression techniques	31%	21%	23%	25%	2.42
Full veneer crown	23%	29%	33%	15%	2.40
Porcelain jacket crowns	26%	27%	29%	18%	2.39
Tissue management	25%	30%	27%	18%	2.38
Temporary restorations & cementation	30%	27%	20%	23%	2.36

procedures" and "Amalgam restorations and tooth preparation" with a very low mean value of 2.39 and 2.22 respectively.

**Table 4.** Response to Operative Dentistry continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Esthetic consideration in operative dentistry	20%	23%	29%	28%	2.65
Retentive pins in operative dentistry	18%	28%	38%	16%	2.52
Anterior composite restorations	24%	24%	28%	24%	2.52
Inlays & onlays	16%	32%	38%	14%	2.50
Posterior composite restorations	19%	33%	33%	15%	2.44
Biological aspects of operative procedure	26%	29%	25%	20%	2.39
Amalgam restorations & tooth preparation	40%	20%	18%	22%	2.22

There was overwhelming positive reaction from respondents when asked about their perceived need for "Endodontics" as shown in Table 5. Among the ten subject topics of this competency area "Bleaching of vital and non-vital teeth" rated the highest interest with a mean value of 2.90. On the contrary "Anatomy of the root canal system" attracted minimal need among the respondents with a low mean value of 2.49.

The fifth competency area listed was "Periodontics" as shown in Table 6. The "Periodontal treatment of medically compromised patients" and "Management of periodontal emergencies" were considered to be of great need with mean values of 2.84 and 2.81 respectively; while minimal need was perceived for "Periodontal instrumentation" with a low mean value of 2.24.

"Pediatric dentistry", the sixth major competency area was perceived as an appropriate subject for continuous education as shown in Table 7. "Nitrous oxide-oxygen inhalation for children" was considered a critically needed course by 70% [200] of the respondents. "Endodontic treatment and traumatic injuries"; "Behavioral management"; and "Prosthetic treatment of children" were considered as needed. "Diagnosis of periodontal disease in children" received a low interest among the respondents with a low mean value of 2.36.

For orthodontics, perceived need was high for

**Table 5.** Response to Endodontic continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Bleaching of vital and non-vital teeth	11%	20%	37%	32%	2.90
Treatment of traumatized teeth	15%	20%	37%	28%	2.78
Endodontic emergencies	19%	19%	27%	35%	2.78
Control of pain and anxiety	17%	24%	27%	32%	2.74
Diagnosis of periapical diseases	19%	23%	29%	29%	2.67
Diagnosis of pulpal diseases	21%	21%	28%	30%	2.66
Obturation of the Root canal system	13%	30%	36%	21%	2.65
Restoration of endodontically treated teeth	25%	18%	30%	27%	2.59
Cleaning & shaping of the root canal system	22%	25%	27%	26%	2.57
Anatomy of the root canal system	22%	29%	27%	22%	2.49

**Table 6.** Response to Periodontics continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Periodontal treatment of medically compromised patients	9%	23%	43%	25%	2.84
Management of periodontal emergencies	12%	25%	33%	30%	2.81
Pattern of bone destruction of periodontal Disease	11%	34%	34%	21%	2.65
Diagnosis and treatment planing	22%	30%	24%	24%	2.50
Prevention of periodontal disease	28%	25%	28%	19%	2.38
Periodontal instrumentation	29%	31%	27%	13%	2.24

**Table 7.** Response to Pediatric Dentistry continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Nitrous oxide-oxygen inhalation for children	7%	23%	35%	35%	2.98
Endodontic treatment and traumatic injuries	10%	23%	38%	29%	2.86
Behavioral management	13%	22%	34%	31%	2.83
Prosthetic treatment of children	11%	29%	33%	27%	2.76
Prevention of disease in children	13%	30%	32%	25%	2.69
Skeletal growth and development	9%	34%	40%	17%	2.67
Diagnosis of periodontal disease in children	21%	35%	31%	13%	2.36

all questions asked, the least mean being 2.87 as shown in Table 8. Response to oral and maxillofacial surgery topics is shown in Table 9. "Dental and Medical emergencies" rated the highest interest among the respondents with a high mean value of 3.10, while "Patient evaluation and referrals" received a low interest.

**Table 8.** Response to Orthodontics continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Early mixed dentition treatment	7%	19%	36%	38%	3.05
Diagnosis & treatment planing	13%	15%	30%	42%	3.01
Minor tooth movement in adult patients	8%	22%	41%	29%	2.91
Etiology of malocclusion & associated maxillofacial deformities	11%	23%	34%	32%	2.87

**Table 9.** Response to Oral and Maxillofacial Surgery continuing education courses.

Response	No Need	Little Need	Great Need	Critical Need	$\bar{X}$
Dental and medical emergencies	8%	15%	36%	41%	3.10
Implants	10%	14%	33%	43%	3.09
Management of traumas	6%	22%	37%	35%	3.01
Treatment of osteomyelitis & Necrosis of the jaws	7%	25%	34%	34%	2.95
Dentoalveolar surgery	10%	23%	45%	22%	2.79
Treatment of odontogenic disease	9%	29%	40%	22%	2.75
Patient evaluation and referrals	23%	21%	37%	19%	2.52

## Discussion

### Demographic data

Analysis of the demographic data reveals that most of the general dental practitioners in the Kingdom are recent graduates who already may have learned newer developments and procedures during their dental education. Thirty one percent had attended more than four continuing education courses during the previous two years, while about forty six percent had attended either one or two continuing education courses during the previous two years. In U.S.A., prior to World War II, perceived need by dentists for continuing education was little, but as the need for continuing education became more apparent, especially to the dental practitioners, dental societies, study clubs, and dental schools began offering continuing education courses.<sup>12,13</sup> Continuing education was voluntary<sup>14</sup> until Minnesota became the first state to implement a continuing education requirement for licensure renewal in 1969. Now, continuing education requirements are mandated by many state dental societies and dental boards.<sup>7,14</sup> In order to improve effectiveness and efficiency in the provision of dental care among the general dental practitioners in the Kingdom of Saudi Arabia, continuing education opportunities should be

permitted and actively promoted by institutions employing dentists. Mandatory continuing education as a requirement for relicensure should be considered. The results also suggest that dentists prefer courses to be offered on either weekends or shortly after weekends. Block et al<sup>5</sup> also found a preference for one-day programs that were held on Friday or Saturday. Hamilton et al<sup>10</sup> in their study described a preference for weekday evenings on Friday or Saturday. Overall, such preferences indicated a desire to minimize disruption of the work routine.

### Priority ranking by content

Table 10 lists the top ten items identified most often by the general dental practitioners as "greatly" or "critically" needed. Eight of the ten items are related to orthodontics, and oral and maxillofacial surgery. All the four topics in the competency area of orthodontics showed critical need among the general dental practitioners. Based on this, continuing education planners in the Kingdom should concentrate in these competency areas as they relate to clinical dentistry. Results also showed that there was high interest expressed by the general dental practitioners in clinical dentistry topics, such as "endodontic treatment and traumatic injuries", "behavioral management", "treatment of traumatized teeth", "bleaching of vital and non-vital teeth", "periodontal treatment of medically

**Table 10.** Highest ten items by need score.

Rank	Item	$\bar{X}$
1	Dental and Medical emergencies	3.10
2	Implants	3.09
3	Early mixed dentition treatment	3.05
4	Management of traumas	3.01
5	Diagnosis and treatment planing in orthodontics	3.01
6	Nitrous oxide-oxygen inhalation for children	2.98
7	Treatment of osteomyelitis & Necrosis of the jaws	2.95
8	Minor tooth movement in adult patients	2.91
9	Bleaching of vital and non-vital teeth	2.90
10	Etiology of malocclusion & associated maxillofacial deformities	2.87

compromised patients" and "management of periodontal emergencies".

The ten items mentioned least often in needs score are listed in Table 11. Four of them relate to removable prosthodontics.

**Table 11.** Lowest ten items by need score.

Rank	Item	$\bar{X}$
51	Prevention of periodontal disease	2.38
52	Tissue management	2.38
53	Diagnosis of periodontal disease in children	2.36
54	Provisional restoration & cementation	2.36
55	Try-in of removable prosthesis	2.36
56	Insertion of removable prosthesis	2.36
57	Full Dentures	2.28
58	Periodontal instrumentation	2.24
59	Impressions procedures	2.24
60	Amalgam restorations and tooth preparation	2.22

Recent literature assessing the need of continuing education is limited.<sup>3,9,15-17</sup> Four of the most recent surveys were conducted between 1981 and 1984,<sup>3,15-17</sup> while another was completed over a decade ago.<sup>9</sup> Despite differences in topic content and analytical methods, results from these surveys showed that there are differences in preferences along the following categories: generalists and specialists, experience level, age, urban and rural dentists, solo and group practitioners.<sup>3,9,17</sup> The relatively low interest may be related to the following factors: (1) dentists may delegate some of these procedures and therefore may send auxiliaries to the programs rather than attend themselves; (2) dentists may believe they already have a good grasp of such fundamentals as cavity design and manipulation of amalgam alloy; (3) practitioners may believe it inappropriate to try to acquire a large, specialized body of knowledge through traditional continuing education courses.

### Priority ranking of the eight competency areas as it relate to Part-I

Orthodontics, oral and maxillofacial surgery, and pediatric dentistry received the most

enthusiastic support while operative dentistry and removable prosthodontics received the lowest interest. Factors such as level of dental education, years of experience, and participation in the continuing education courses could potentially influence these perceived needs for educational topics. Further research efforts should be directed toward identifying these factors. To ensure that the special dental needs of the community being served are met, and to address the educational needs of the general dentists, CE program planners, at all levels of Dental Health Care team, must give consideration to the differences in perceived needs that exist between the various groups cited in this study. In addition, these perceived needs should be reassessed on a regular basis. Even though this study was designed for general dental practitioners in Saudi Arabia, the questionnaire, the methods of analysis, and the results, with modification and refinement can be readily converted for use and application in government, public, or private dental organizations.

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#### Acknowledgement

The author would like to express his gratitude to Prof. Marwan Abou-Rass, Chairman, Department of Endodontics, University of Southern California, School of Dentistry, for his help and advise in the questionnaire design and for his contribution and guidance. Special thanks is extended to Dr. Nasser Al-Zaid, Dr. Abdullgani Al-Quadi, Dr. Ghazi Holdar, Dr. Khalid Omar, Dr. Akeel Al-Akeel, and Dr. Khaled Al-Hussein in distributing and collecting the questionnaires. Finally, my gratitude to Prof. Hezekiah Adeyemi Mosadomi, for his help in the preparation of this paper.