

# Professional development for dentists: patterns and their implications

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## Abstract

**Background:** Approaches to models of professional development for dentists continue to evolve. This study examined the participation and attitudes of dentists in non-formal and informal professional development and continuing dental education.

**Methods:** Two methodologies were utilised: a self-administered cross-sectional survey of dentists in Victoria, Australia (conducted October to December, 1994), and a review of the records of the Continuing Education Unit of the School of Dental Science at The University of Melbourne for 1995 to 1999. For the cross-sectional survey, the sampling frame was the register of dentists of the Dental Board of Victoria in 1994.

**Results:** From a sample of 616 dentists invited to participate, 396 usable questionnaires were returned (response rate, 66.8 per cent). The valid data indicated that 52.5 per cent of dentists belonged to a study group, 66.5 per cent subscribed to at least one dental journal (other than the *Australian Dental Journal*), 88.9 per cent discussed dental matters with colleagues regularly, 98.6 per cent personally assessed their own work, 13.3 per cent did not attend continuing education courses and 18.1 per cent did not complete any courses in the year preceding the survey. Participation patterns in continuing education courses were related to socio-demographic characteristics of dentists. Some support was apparent for flexible delivery options for professional development.

**Conclusions:** Involvement of dentists in Victoria, Australia in professional development activities is high, with complex participation patterns. Whether these patterns adequately address their own and the community's needs for such activities is debatable. Such issues should impact on any regulatory models for professional development for dentists and the development and use of alternative continuing education modalities.

**Key words:** Professional development, continuing dental education, dentists, survey.

(Received for publication May 2000. Accepted July 2000.)

## INTRODUCTION

Professional development for dentists may be defined briefly as the refinement of the status of the individual with regard to relevant professional attributes, including updating and change of processes. It may involve formal, non-formal or informal education and incidental learning, as discussed by Cannavina et al.<sup>1</sup> Mercer et al<sup>2</sup> described an Index of Professional Development comprising ten specific components, including attendance at continuing education courses, professional association participation, journal reading, dental book buying, practice meetings, use of audit and membership of a peer review group. From a different perspective, Chambers<sup>3</sup> discussed a new model for professional development based on his view of contemporary concepts of professionalism and learning, including an important role of the dentist's practice.

Based on the current rapidity of information changes, developments in information technology and approaches to service delivery and consumerism, it is important for the dental profession to address approaches to professional development. These considerations should form the basis for strategic planning by dentists themselves, and relevant organizations, with regard to educational and learning processes. The response to this challenge has varied internationally, for example, with regard to requirements for mandatory continuing education for re-registration<sup>4</sup> and developments in distance education and computer-assisted learning.<sup>5,6</sup> To inform such debates, the purposes of the present study were to measure and analyse the participation of dentists in non-formal and informal professional development activities and continuing education, and to review attitudes held by dentists towards professional development.

## MATERIALS AND METHODS

Information for the study was collected by: (a) a self-administered cross-sectional survey of dentists within Victoria, Australia; and (b) a retrospective review of administrative records of the Continuing Dental Education Unit of the School of Dental Science at the University of Melbourne.

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## The self-administered cross-sectional survey

### Pilot surveys

Three pilot surveys (PS1, PS2 and PS3) were completed, involving initial samples of 33 dentists in PS1 and 83 different dentists for each of PS2 and PS3. A systematic sampling methodology from the register of dentists provided by the Dental Board of Victoria was utilised.

Pilot survey 1 involved interviews with the substantive questions being open-ended. Face-to-face interviews were conducted for dentists residing in metropolitan Melbourne and telephone interviews for dentists living in rural Victoria, for practical reasons such as cost and convenience. The interview structure for PS1 was moderately scheduled with the inclusion of probes (secondary questions) which facilitated exploration of responses as relevant.

Pilot surveys 2 and 3 involved self-administered questionnaires, with the open ended format being retained for most of the substantive questions in PS2 to further develop a range of response options that could be utilised in PS3. Response formats involving five-point scales were developed for PS3. The questionnaires were constructed according to principles and techniques described by Abramson<sup>7</sup> and de Vaus.<sup>8</sup> The question stem and response options utilised to evaluate the importance of issues in the decision for dentists to attend continuing education course(s) were qualitatively similar to those discussed by Patterson and Thompson<sup>9</sup> to allow comparison of the findings.

### Sample design for the definitive survey

The sampling frame for the definitive survey was the register of dentists previously used for the pilot surveys. A systematic sampling methodology was utilised to select 744 dentists from the dental register. After deleting those who had been selected for the pilot surveys and who had an address outside Victoria, the sample comprised 616 dentists. Estimating a response rate of 65 per cent, it was planned for data provided by approximately 400 dentists to be available for analyses.

### Conduct of the definitive survey

The definitive survey was undertaken recognising relevant principles and techniques pertaining to the enhancement of the quality and quantity of responses for postal surveys as described by Dillman.<sup>10</sup>

Study participation was invited by telephone request, and where relevant, a follow-up letter and questionnaire were mailed out. Three follow-ups were completed. The invitation to participate and follow-up contacts were designed and undertaken so as to minimise reactive measurement effects, for example, based on the content and professional aspects of the letters and telephone interaction. The period of the data collection for the definitive survey was October to December, 1994. The study was approved by the

**Table 1. Response profile for the definitive survey.**

Initial sample of dentists	616	
Total number of ineligible dentists identified during different phases of the survey	23	(10) Address outside of Victoria (8) Address unknown (2) On holidays during the period of the survey (2) Health problems (1) A member of the project team
No. of completed questionnaires returned	396	
Response rate	396/593=66.8%	

Human Research Ethics Committee, The University of Melbourne.

### Data management plan and statistical analyses

Uni-variate, bi-variate and multi-variate analyses of the data were completed<sup>8,11</sup> utilising word processing packages for the qualitative data and SPSS (SPSS for Windows, Release 8.0.0 1997. Chicago: SPSS Inc.) software.<sup>12,13</sup> The level of statistical significance for the study was set at  $p \leq 0.05$ .

### The retrospective review of information from the Continuing Dental Education Unit, School of Dental Science, The University of Melbourne

Administrative records from the Continuing Dental Education Unit were available for the period 1995 to 1999 and course evaluations provided by participants were available for the period 1997 to 1999. Not all course participants completed the evaluation forms at the end of each course and not all course participants were dentists, although non-dentists comprised a very small minority of attendees at a few courses.

## RESULTS

### The definitive cross sectional survey

#### Response profile

The response rate for the definitive survey was 66.8 per cent (Table 1). It was not possible to undertake chi-square analyses to assess the statistical significance of any differences in socio-demographic characteristics between the sampling frame and the response profile of the sample. This is because the sample size of tabulations for the dentist workforce in Victoria published by the Dental Board of Victoria in September 1994<sup>14</sup> did not match the sample size of the register provided at the time of the request for such a list. However, visual comparison of published tabulations for the overall sampling frame and the responses provided by participants did not reveal practical differences in socio-demographic characteristics between the two data sources.

#### Non-formal and informal professional development

Table 2 presents the levels of involvement of dentists in non-formal and informal professional development

‡Copies of the questionnaires are available from H A Best.

**Table 2. Involvement of dentists in non-formal and informal professional development activities.**

Statements	Frequency of yes response (f)	System missing (a)‡	Sample size issues (initial sample size, n=396)		(c)-(d) final sample size (e)	Overall % of yes response (f/n)	Valid % of yes response (f/e)§	Standard error of proportion of yes response for sample (e)	95% CI for proportion of yes response for sample (e)
	(n)-(a) resulting sample size (c)		Not relevant response (d)						
I belong to a study group*	177	18	378	41	337	44.7	52.5	0.025	0.476-0.574
I subscribe to at least one dental journal (excluding the <i>Australian Dental Journal</i> )†	242	16	380	16	364	61.1	66.5	0.023	0.620-0.709
I personally assess my own work†	361	17	379	13	366	91.2	98.6	0.006	0.976-0.997
I talk about dental matters with my colleagues on a regular basis†	330	15	381	10	371	83.3	88.9	0.015	0.860-0.919

\*Non-formal professional development activity.

†Informal professional development activities.

‡The statement did not apply to the respondents.

§Valid % refers to the % calculated on non-missing data.

activities. It shows that 52.5 per cent of dentists belonged to a study group, 66.5 per cent subscribed to at least one dental journal (other than the *Australian Dental Journal*), and 88.9 per cent indicated that they discuss dental matters with colleagues regularly. All of these levels may be considered relatively high. In addition, 98.6 per cent of valid responses indicated that the dentists personally assessed their own work.

#### Attendance at continuing education courses

Valid responses to the question ‘Do you attend continuing education courses?’ indicated that 86.7 per cent of respondents reported doing so (Table 3). Bivariate analyses of socio-demographic variables and whether dentists attended continuing education courses is presented in Table 4. The chi-square statistics indicated that the variables age, year of undergraduate dental qualification attainment, membership of the Australian Dental Association Inc. (ADA) and hours of employment, were significantly related to such attendance.

Logistic regression modelling for the data was then undertaken (not shown in Tables). The final model selected was based on the Enter Method, a technique for block entry of the predictor (socio-demographic) variables into the model. The variable age, was excluded because of its co-linearity with year of graduation. The amount of variation explained by the model (as indicated by the Nagelkerke – R<sup>2</sup> statistic) was 28.1 per cent. Membership of the ADA and year of

graduation each retained a significant relationship to attendance. Hours of employment did not retain an overall significance level in this model. Members of the ADA were 7.2 times more likely than non-members to attend continuing education courses. The model also indicated that dentists who attained their undergraduate dental qualification in the period 1980 to 1989 were 4.6 times more likely than dentists graduating before 1969 to attend such courses.

In attempting to explore a professional development paradigm, the variables referred to were, belonging to a study group, subscription to at least one dental journal (excluding the *Australian Dental Journal*), personally assessing one’s own work and regularly discussing dental matters with colleagues. These were modelled using logistic regression with the dependent variable being attendance at continuing dental education courses (Table 5). The first two of these predictor variables were significant. Affirmative responses to the variables of belonging to a study group and subscription to at least one dental journal were related to increased attendance at such courses.

#### Hours of attendance at continuing education courses

Descriptive statistics for the number of hours of attendance at continuing education courses by dentists in the financial year preceding the survey, are shown in Table 6. The mean hours of attendance for the ungrouped data was 32.0 (95 per cent CI; 28.3-35.7). The valid percentage of dentists (13.3) indicating that they did not attend continuing education courses *per se*, was combined with the number of participants completing zero hours in the year preceding this survey (after adjusting for the sub-sampling effect, 4.8 per cent). It gave an overall value of 18.1 per cent, for those who did not complete any continuing education courses in the previous year. Approximately twice as many dentists attended up to and including 10 hours (24.5 per cent of valid responses), as compared to 41 to 60 hours.

**Table 3: Attendance by dentists at continuing education (CE) courses**

Attendance by dentists at CE courses	Frequency	%	Valid %*	Cumulative %
Yes	333	84.1	86.7	86.7
No	51	12.9	13.3	100.0
Missing	12	3.0		
Total	396	100.0	100.0	

\*Valid % refers to the % calculated on non-missing data.

**Table 4. Bi-variate analyses of socio-demographic variables and whether the dentists attend continuing education courses.**

Socio-demographic variables	Pearson's chi-square (PCS)	PCS with continuity correction	Degrees of freedom	Probability value for Pearson's chi-square	Probability value for PCS with continuity correction	No of missing cases
Gender	0.107	0.017	1	0.743	0.895	12
Age	19.972	–	3	0.000†	–	72
Country of birth						12
5 categories*	9.405	–	4	0.052	–	
2 categories	0.114	0.032	1	0.736	0.857	
University from which undergraduate dental qualification was attained	0.283	–	2	0.868	–	13
Year of graduation for undergraduate dental qualification	38.592	–	3	0.000†	–	27
Attainment of a postgraduate qualification	0.944	0.629	1	0.331	0.428	13
Membership of the Australian Dental Association	21.958	19.822	1	0.000	0.000†	12
Employment hours	13.696	12.140	1	0.000	0.000†	29
Postcode of main employment location	0.518	0.223	1	0.472	0.637	72
Type of dental employment						28
5 categories	4.676	–	4	0.322	–	
4 categories	4.064	–	3	0.255	–	
3 categories	3.260	–	2	0.196	–	

\*Categories refers to the number of levels of measurement of the variable.

†Statistically significant,  $p \leq 0.05$ .

Bi-variate analyses (utilising chi-square tests) of socio-demographic variables and hours of attendance at continuing education courses, showed several statistically significant variables: year of graduation, attainment of a postgraduate qualification, membership of the ADA, hours of employment and type of employment (not shown in Tables). A general linear model was constructed for the data; hours of employment and type of employment retained significance in this model. The amount of variation explained by the model as indicated by the adjusted R squared statistic was 13.9 per cent. Dentists working full-time attended more hours of continuing education than those working part-time. The results of the multiple comparison procedure (utilising Tukey's Honestly Significant Difference test), showed that dentists working in restricted or specialist practice (in the private sector) attended significantly

more hours of continuing education than those working in private practice or government general practice. Dentists working in private general group practice attended more hours than those working in government general practice, while dentists working in solo group practice and government general practice did not differ significantly in hours attended.

#### *Issues in the decisions of dentists to attend continuing education courses*

Uni-variate summary statistics for the level of importance of issues in the decision of dentists to attend continuing education courses are presented in Table 7 in descending order. The topic(s) of the course ( $m=3.9$ ) and the identity of the lecturer(s) ( $m=3.4$ ) were identified as the most important issues in the decision to attend, followed by the cost of travel/accommodation

**Table 5. Logistic regression analyses of professional development variables as predictors of attendance at continuing education courses.**

Professional development variables	Categories	Odds ratio	95% CI	Probability value
Belong to a study group	No	1.00	Reference	
	Yes	2.47	1.02-6.02	0.05*
Subscription to at least one dental journal (excluding the <i>Australian Dental Journal</i> )	No	1.00	Reference	
	Yes	3.52	1.52-8.19	0.00*
Talk about dental matters with my colleagues on a regular basis	No	1.00	Reference	
	Yes	2.55	0.95-6.87	0.06
Personally assessing my own work	No	1.00	Reference	
	Yes	1.87	0.13-26.18	0.64
	Constant			0.85

\*Statistically significant,  $p \leq 0.05$

#### *Notes:*

Number of cases included in the analysis: 314 (number of cases rejected because of missing data: 82).

Criteria for Goodness-of-Fit of the model, the Model, Block and Step chi-square statistics ( $p \leq 0.05$ ) and Hosmer and Lemeshow Goodness-of-Fit Test ( $p > 0.05$ ) were satisfied.

Nagelkerke –  $R^2$  (denotes the amount of variation explained by the model)=0.168.

Reference: indicates the category to which the odds ratio refers.

**Table 6. Hours of attendance by participating dentists at continuing education courses.**

Hours attended	Frequency	%	Valid %*	Cumulative %
0	13	3.3	4.2	4.2
1-10	62	15.7	20.3	24.5
11-20	68	17.2	22.2	46.7
21-30	49	12.4	16.0	62.7
31-40	47	11.9	15.4	78.1
41-60	40	10.1	13.1	91.2
61-225	27	6.8	8.7	
Missing	90	22.7		
Total	396	100.0	100.0	100.0

\*Valid % refers to the % calculated on non-missing data.  
Mean hours of attendance (ungrouped data): 32.0 (95% CI; 28.3-35.7).

and the distance/travel time required (both  $m=3.0$ ). Issues involving the date or time of day of the course were rated with lower mean values, together with the location of the venue, its attractions and the opportunity to combine the course with a holiday (range of means 2.7 to 2.1). The mean for the factor relating to loss of income was 2.7.

***The retrospective review of administrative records of the Continuing Dental Education Unit, School of Dental Science, The University of Melbourne***

The structure and attendance patterns for the continuing education courses provided by the School of Dental Science are presented in Table 8. For the period 1997 to 1999, the most popular courses (as determined by demand exceeding supply), were those based on the disciplines of orthodontics and endodontics and those including a hands-on component. Waiting lists of potential participants were required for several courses. Course evaluations for 1999 indicated topics in endodontics, prosthodontics and periodontics were requested most often. The continuing education programme itself is determined by patterns of demand and the topics suggested by participants. Whilst all

**Table 8. Frequency distribution for the structure of continuing education courses offered for the period 1995-1999 by the School of Dental Science, the University of Melbourne.**

Structure of courses offered	Year of course				
	1995	1996	1997	1998	1999
Full day lecture courses	3	7	12	11	16
Half day lecture courses	0	1	4	7	6
Combined lecture/laboratory courses	7	11	8	13	8
Total number of courses offered	10	19	24	31	30
Total attendance	Unavailable	Unavailable	369	423	276

courses must have a convenor affiliated with the School of Dental Science, most of the lecturers are clinicians practising externally to the University. Cumulative figures for frequency of attendance by dentists at courses provided by the Continuing Dental Education Unit in 1998 showed that 83 per cent attended one or two courses and 17 per cent attended between three and eight courses. In 1999, 91 per cent attended one or two courses and nine per cent attended between three and eight courses (not shown in Tables).

Expressed interest in alternative delivery options for professional development purposes derived from course evaluations is presented in Table 9. Clearly these options are not simply technology-based and reflect a flexible approach to course provision. The preferences are distributed rather broadly between the six specific options.

**DISCUSSION**

**Limitations of the study**

The effects of socially desirable response patterns and the validity of self-reported data must be noted

**Table 7. Importance of issues in the decision of dentists to attend a continuing education course(s).**

Issues	Sample size (n=396)	'Mean' response	Standard deviation	Median response	Mode
The topic(s) of the course	329	3.9	0.3	4.0	4
The identity of the course lecturer(s)	328	3.4	0.7	3.5	4
Cost – travel/accommodation	328	3.0	0.8	3.0	3
The distance/travel time required	328	3.0	0.8	3.0	3
Family commitments	329	2.9	1.0	3.0	3
Cost – registration	328	2.8	0.8	3.0	3
Whether the course involves a 'Hands on component'	327	2.8	0.8	3.0	3
The potential to make professional contacts	326	2.7	0.9	3.0	3
Loss of income	329	2.7	0.9	3.0	3
Date – day of the week	329	2.7	1.0	3.0	3
Time of the day	328	2.5	1.1	3.0	3
The location of the venue and its attractions	327	2.3	0.9	2.0	2
The opportunity to combine the course with a holiday	326	2.3	0.9	2.0	2
Date – month of the year	327	2.1	1.0	2.0	1

Scale utilised for the measurement of 'importance'.

1. Not very important.
2. Very little importance.
3. Somewhat important.
4. Great deal of importance.

**Table 9. Expressed interest in alternative delivery options for professional development purposes.**

Type of flexible delivery option	Year		
	1997	1998	1999
Video conferencing	18 (22%)	20 (17%)	7 (13%)
Audio tapes of lectures	14 (17%)	26 (23%)	12 (23%)
Focus groups	14 (17%)	7 (6%)	3 (5%)
Multimedia products	12 (15%)	17 (15%)	10 (19%)
Distance learning	13 (16%)	27 (23%)	11 (20%)
Long courses	8 (10%)	16 (14%)	8 (15%)
Other	0	0	0
Total responses	79 (100%)	113 (100%)	51 (100%)

when considering the magnitude of estimates for the cross-sectional survey within this study. This is despite the consideration given to these issues (such as confidentiality of the results) within the pilot testing processes and prior to undertaking the definitive survey. Limited external validation with regard to attendance patterns was attained by comparing the survey data with records of the Continuing Dental Education Unit. Over-representation of dentists who are disposed positively towards professional development may occur when response rates are incomplete. Follow-up of non-respondents was not undertaken for the surveys. However, comparison of socio-demographic characteristics of the respondents with the sampling frame was undertaken and no practical differences were detected between the groups. Also, the response rate for completed questionnaires for the definitive survey (66.8 per cent) compares favourably with the response rates (51 per cent and 71 per cent) for similar self-administered questionnaire surveys undertaken in Victoria, Australia and reported by Stewart et al<sup>15</sup> and Lawrence et al<sup>16</sup> respectively.

### Non-formal and informal professional development activities

The high levels of involvement of dentists in non-formal and informal educational and learning activities in this study provides impetus for the recognition of such activities in any type of regulatory model for professional development. Whether continuing education authorities should develop strategies to enhance these activities is debatable because of their self-directed aspect.

### Attendance at continuing education course(s)

This study shows that many of the dentists surveyed in 1994 in Victoria were participating in continuing education, with a valid percentage of only 13.3 indicating that they did not attend continuing education courses. The valid percentage of dentists who did not complete any continuing education in the year preceding the 1994 survey was 18.1, slightly lower than the value of 21 per cent reported by Mouatt et al<sup>21</sup> for a survey in England on the same issue, but for an earlier time period and for a sample restricted to general practitioners. Of note, the present survey was

**Table 10. Methods which may be utilised to establish professional development needs of health professionals.**

Self assessment: <ul style="list-style-type: none"> <li>• from paper based journals or computer sources</li> <li>• audit               <ul style="list-style-type: none"> <li>– quality improvement cycles</li> </ul> </li> </ul>
Peer review (different designs): <ul style="list-style-type: none"> <li>• examination of patients, infection control protocols, practice records (comprehensive structure, process and outcome assessments)</li> <li>• video recording of consultations</li> <li>• study groups               <ul style="list-style-type: none"> <li>– assessment of log diaries</li> <li>– discussions (reflection)</li> </ul> </li> </ul>
Consumer complaints
Patient satisfaction/improvement surveys
Incident reports (critical incidents)
Legal claims
Population based surveys <ul style="list-style-type: none"> <li>• health status</li> <li>• attitude, knowledge and behaviour surveys on practice patterns (including motivation)</li> </ul>
Review of third party data bases (insurance companies, managed care organizations): <ul style="list-style-type: none"> <li>• performance indicators (number of referrals made to specialists, number of diagnostic tests requested, over treatment, under treatment)</li> </ul>
Delphi technique (or panel of wise persons)
Behavioural event interviews
Interviews with recent graduates

conducted in the year preceding the introduction of the Professional Development Program by the ADA (Victorian Branch), which aims at encouraging involvement in continuing education by rewarding participants with a certificate of professional development for the accumulation of points. Strong participation in limited-attendance courses offered by the Continuing Dental Education Unit of The University of Melbourne for the period 1997 to 1999 was also noted. Of interest, the apparent decline in attendance in 1999 (276) over that in 1998 (423) for a similar number of courses provided, has been reversed by high attendance and large enrolments for courses in 2000 (not shown in Tables), when 20 of 30 courses offered had full enrolments within three months of distributing the 2000 course brochure to all registered dentists in Victoria. This may be attributed in part to a new initiative of web-based course advertising.

This level of support for continuing education may be based on the assumption that it positively influences the practice of dentistry. However, despite some recent innovations in course delivery, the majority of continuing dental education offerings remain in the lecture format. This format has been challenged over the last 20 years from both theoretical and research perspectives for its value in improving professional practice<sup>17,18</sup> and more effective methods have been identified, including the establishment of the CRISIS criteria.<sup>19,20</sup> CRISIS is an acronym for seven criteria which have been described as promoting the effectiveness of continuing education and may be summarised by use of the topics: 'Convenience', 'Relevance',

'Individualisation', 'Self assessment', 'Interest', 'Speculation' and 'Systematic'. However, given that dentistry in Victoria, Australia is still a profession dominated by solo and small group practices, the market for continuing dental education may continue to involve a substantial component of lecture (conference) formats because of the need for professional identification and personal contact, identified as important factors in the present study.

In predicting attendance at continuing education courses in the present study, it was apparent that ADA members were significantly more likely to attend such courses than non-members. The Association conducts regular conferences and conventions and its specialist societies have ongoing meetings that are unavailable to non-members. Dentists traditionally considered to be mid-career had a greater likelihood of attendance than those later in their careers. Whether earlier graduating dentists have developed other forms of updating or have established professional relationships as substitutes for formal attendance at continuing education courses, is unknown. It could be hypothesised that professional maturation and established practices would produce differences in learning needs and styles. The features of the general linear model established for socio-demographic variables and the number of hours of attendance at continuing education in the year preceding the survey are of interest, in that part-time employees may attend continuing education in a fashion specific to their number of hours of employment.

In summarising relationships between socio-demographic variables and attendance *per se* and the number of hours of attendance at continuing education courses, the impact of confounding issues, i.e., talking about dental matters with one's colleagues on a regular basis and personally assessing one's own work, should be clarified. These confounders preclude explicit statements of overall reduction in levels of professional development for dentists working part-time, longer term graduates, solo general dental practitioners and dentists working in government service. However, it is apparent that there is variation within the profession with regard to participation in continuing education and professional development activities, therefore a mix of continuing education programmes should be planned and implemented accordingly.

Mandatory continuing education would seem from a logistical perspective to be a means of satisfying societal demands for appropriate professional development by dentists. However, a conceptual model for improvement in practice has yet to be established in Australia and the introduction of such a programme is premature. The General Dental Council in the United Kingdom approved its Millenium Project – 'Lifelong Learning: Re-certification for the Dental Profession' at its meeting on 9 November 1999.<sup>22</sup> Following on from a proposed preparatory voluntary recertification scheme, a mandatory scheme of professional development requirements for registration is expected to commence in January 2002.<sup>22</sup> Currently 43 states in the United

States of America have mandatory continuing education requirements for relicensure.<sup>23</sup> However, of interest, is the influence of the Pew Health Professions Commission which is assisting health licensing boards to determine if and where the current structures of these requirements do not necessarily ensure continued competence of dentists and therefore protection of the public.<sup>24</sup> It is to be noted that the Australian Dental Association Inc. recently announced a National Continuing Education Framework.<sup>25</sup> This framework involves standardised accreditation and valuation for credit points of continuing education courses offered in Australia and the annual issuing of certificates to those ADA members who accumulate sufficient educational credits during a year.<sup>25</sup>

### **Issues influencing the decisions by dentists in Victoria, Australia to attend continuing education courses**

In comparing the present results for the level of importance of issues in decisions for dentists in Victoria, Australia to attend a continuing education course(s) with responses of Canadian dentists,<sup>9</sup> it is apparent that the two issues identified as being the most important by the former dentists were the same as those identified in the latter study. These issues were the topic/content of the course and identity of the lecturer.

The very high importance assigned by respondents in the present survey to the issues of topics and identity of lecturers can be utilised to plan for increased attendance at continuing education courses by the presentation of popular topics and lecturers. However, real educational needs<sup>26</sup> and the issue of improving performance in practice may be unmet by this approach. Dentists' preferences for continuing education courses are traditionally clinical<sup>27</sup> and their self-perceived needs may not be indicative of their real needs. Grace<sup>28</sup> stated that it is important to develop a dental beliefs paradigm that enables a better balance between clinical techniques and patient management. A further issue to consider in course selection to meet the educational needs of dentists is motivational maturity which may account for the popularity of certain didactic formats in continuing education.<sup>29</sup> The role of the evaluation data fed back to programme planners by those dentists who do actually attend courses should be placed in perspective. Several authors have noted that the majority of courses are attended by a minority of practitioners.<sup>2,17,30</sup> Courses evaluated favourably by a minority may not be useful to the majority who may have quite different problems of proficiency.<sup>19</sup>

The question also arises as to whether the community's dental needs are being met by continuing education and whether such activities adequately reflect relevant trends. Davis and Pitts<sup>27</sup> reported that Scottish general dental practitioners felt that they needed education in conservative dentistry, endodontics and periodontics and that these topics reflected both dental disease patterns in the Scottish population and the typical workload of the general dental practitioner.

Noteworthy was the finding that the respondents had little interest in the use of computers in dentistry or other priority areas for training, as identified by the Committee on Continuing Education and Training for Dentists in the United Kingdom in 1992.<sup>27</sup> Specific organisations may need to design in-service training programmes to address the goals of the organisation.

A further issue related to the importance assigned by respondents to the topic of the continuing education course, is that non-traditional disciplines may now be required by a substantial number of dentists. Within the Australian dental environment, there are pressures for change in content and the style of dental practice. Given trends towards team dentistry and cost containment issues with regard to dental health expenditures, real educational needs pertaining to management issues, quality concepts or law and ethics could be defined rationally by external parties. However, courses relating to these topics may not develop an appropriate market share and may not be well attended. Since continuing education units in dental schools must operate utilising business principles and as commercial enterprises, a balance must be sought between popular courses, and actual and perceived needs. A summary of methods which may be utilised to assess professional development needs of health professionals is shown in Table 10. These methods differ in their validity, reliability, acceptability and feasibility.

Based on the findings of the present survey, it appears unnecessary in Victoria to locate continuing education courses at holiday locations to enhance participation. Indirect costs of travel, accommodation and distance/travel time required were rated as more important in the decision to attend than the cost of registration and loss of income. These issues could potentially be addressed by distance education modalities such as telelectures, video conferences, internet and CD-ROM delivery, supplemented with print based materials. Follow-up studies to demonstrate that improved access to continuing education was associated with increased use would be required. In the United Kingdom, the objective of improving access for dentists to continuing education has been an impetus for developments in computer-assisted learning, but as yet comprehensive evaluation of the effect on overall participation rates has not been reported.

## CONCLUSIONS

The level of involvement of dentists in Victoria, Australia in professional development activities appeared to be high for the period studied. The patterns of participation in professional development activities were complex and related to socio-demographic characteristics of dentists. Whether these levels and styles of participation adequately address dentists' own needs and those of the community is worthy of further discussion. Additionally, such issues should impact on any regulatory models developed for the professional

development of dentists, and the development and use of alternative continuing education modalities such as computer-assisted learning and distance education. Several needs assessment methods are presented which may enhance the planning by dentists themselves, relevant organisation of structures and processes for continuing professional education and learning.

## ACKNOWLEDGEMENTS

The authors wish to thank the dentists who participated in this study, Ms Samantha Albert who assisted in the collation of the data of the Continuing Education Unit, School of Dental Science, The University of Melbourne and Professor Clive Wright who acted as a supervisor for components of this study. The assistance provided by the Statistical Consulting Centre, The University of Melbourne is also acknowledged.

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