Curriculum survey on tobacco education in European dental schools

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IN BRIEF

- Reveals that patients are asked about tobacco use in all responding schools.
- Reports a third of all responding schools refer smokers to a counselling clinic.
- Highlights that dental students provide brief intervention counselling in only 16% of responding schools.
- Stresses that further practical training of dental students in tobacco use prevention and cessation skills still needs to be encouraged.

RESEARCH

Background and aim Dental professionals need adequate education in tobacco use prevention and cessation skills. The aim of this study was to identify the level of integration of tobacco education in undergraduate curricula of European dental schools. **Method** In 2009, a total of 197 European dental schools were identified through web-based searches. An e-mail survey, containing 20 questions, was sent to each head of school/director of education with up to five follow-up e-mails to non-responders. **Results** Dental schools from 21 European countries responded to the survey. The overall return rate was 68 out of 197 schools (35%). In 14 (21%) dental schools, the students were requested to be tobacco free, 14 (21%) asked their students to quit tobacco use and 21 (31%) offered students cessation assistance. All responding schools reported that patients were asked about their tobacco use; 59% by taking an oral history, 75% using a general medical history form and 10% using a specific tobacco use history form. A total of 34% of the schools referred smokers to an external counselling clinic, 13% referred to a telephone counselling, and dental students provided brief counselling in 11 schools (16%). Forty-five (67%) dental schools reported to have tobacco education implemented in their curriculum, of these 30 (67%) stated their tobacco curriculum was mandatory. Theoretical education on tobacco culture and its impact on oral health were implemented in 45 (66%) dental schools. However, only 18 (40%) schools have introduced practical skills training to their students. Dental schools assessed their students' theoretical knowledge (27%) and practical training (4%), respectively. **Conclusion** Even though theoretical tobacco education appears to be acknowledged by many European dental schools, further practical training of undergraduate dental students in tobacco prevention and cessation skills should be encouraged.

INTRODUCTION

According to the WHO report on the global tobacco epidemic, published in 2011,[1] tobacco use continues to be the number one cause of preventable morbidity and mortality worldwide. The majority of the estimated six million tobacco-related deaths each year are from low and middle income countries.[1] Though there has been 40 years worth of research demonstrating both the human and economic burden of tobacco use, the current cessation rates in both developed and developing countries have stagnated.[1-4] In addition, the WHO estimated that tobacco-use costs economies hundreds of billions of dollars in lost wages and increased healthcare costs. In the UK alone, smoking-attributable hospital admissions cost the NHS an estimated one billion pounds in 2006.[5] WHO's 2008-2013 action plan for the global strategy for the prevention and control of non-communicable diseases[6] gives a high priority to promote interventions to reduce the main shared risk factors for non-communicable diseases, including tobacco use. Significant savings in healthcare and avoiding preventable deaths requires further policies and education to reduce smoking prevalence.

The impact of tobacco use on general and oral health has been well studied over the past few years. Thus it has been well established that tobacco use has a detrimental effect on both oral mucosa and periodontal tissues, while quitting tobacco has been demonstrated to be beneficial for oral health.[7,8] This has given dental professionals a whole new task to address in their practising career. The opportunities are immense as many will see their patients on a regular basis throughout their practising years. Dental professionals need effective and appropriate education of tobacco use prevention and cessation skills. However, various reports in the scientific literature indicate that one of the common barriers for dental professionals providing tobacco use cessation support is the reported lack of education at the undergraduate education level.[9,10]

There clearly needs to be a paradigm change in education techniques related to tobacco education. In this study we explore current levels of education offered by European dental schools in providing health advice on tobacco use to dental patients.[11]

The aim of the study was to collect current baseline information from all participating dental schools in Europe in order to identify:

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1. The level of integration of tobacco education in the dental curriculum
2. The barriers towards integration of tobacco use cessation in the dental curriculum
3. The levels of confidence possessed by European dental educators in applying or teaching tobacco use prevention and cessation.

METHODS

Questionnaire

In 2009, a 20-item questionnaire was created consisting primarily of check boxes to allow selection by the respondent. The topics included:

1. General information about the school, the respondent and the students' tobacco policies
2. Tobacco history taking by the students and referral strategies
3. Integration into both theoretical and practical (clinical) curriculum, including contact hours, topics covered, and student assessment.

The questionnaire used in our study is available on request from the corresponding author.

A circular e-mail containing an accompanying letter and the questionnaire was sent out to deans of identified dental schools throughout Europe, requesting that the e-mail was to be forwarded to the member of staff with major responsibilities for teaching tobacco education in their school. Recipients were invited to reply by postal mail, fax or e-mail.

Identification of dental schools

One hundred and ninety European dental schools were identified from the DentEd database and the Association for Dental Education in Europe (ADEE, www.adee.org) website.[12] A further seven European dental schools were added to the list through web-based searches and consultation with colleagues of the authors. In late 2009, a total of 197 dental schools were electronically contacted in 32 European countries.

Follow-up e-mails

Follow-up e-mails were sent at intervals of three months. In order to maximise the response rate, repeated e-mail reminders were sent to the deans of non-responding schools, (to a maximum of five e-mails) together with follow-up telephone calls. Collection of questionnaire data was terminated in late 2010.

Table 1 Numbers of schools responding per country

Country	Number of dental schools contacted	Number of dental schools responding
Albania	1	0
Austria	3	3
Belarus	1	0
Belgium	5	2
Bulgaria	1	0
Croatia	1	1
Czech Republic	5	0
Denmark	2	1
Estonia	1	1
Finland	3	3
France	15	6
Germany	30	5
Greece	2	2
Hungary	4	2
Iceland	1	1
Ireland	2	1
Italy	33	8
Latvia	1	0
Lithuania	2	2
Norway	3	0
Poland	9	2
Portugal	4	0
Romania	8	6
Serbia	3	0
Slovakia	1	0
Slovenia	1	0
Spain	12	4
Sweden	6	0
Switzerland	4	4
The Netherlands	3	1
Turkey	15	4
United Kingdom	15	9
Total	**197**	**68**

Data entry procedure and statistical analysis

Upon receiving the completed questionnaires, all data were cleaned and entered into Microsoft Excel spread sheets (Microsoft Corporation, Redmond, WA, USA). Descriptive and frequency analysis were performed using PASW statistical software (Version 18.0.0, Polar Engineering and Consulting, Armonk, NY, USA).

RESULTS

Dental schools from 21 European countries responded to the survey by e-mail, fax or postal mail. The overall return rate was 68 out of 197 schools (35%) (Table 1).

General information about the dental school

In 14 (21%) dental schools, the students were requested to be tobacco free, 14 (21%) asked their students to quit tobacco use and 21 (31%) offered their students cessation assistance.

Taking dental patients' tobacco use history

All responding schools (100%) reported that patients were asked about their tobacco use. The information was obtained from the patients by various combinations of oral history taking (40 schools, 59%), general medical history taking (51 schools, 75%), and/or using a specific tobacco use history form (7 schools, 10%) (Fig. 1).

Oral history taking alone or in combination with a general medical history form was most frequently used (35%). Further combinations of a specific tobacco use history form in addition to oral history taking, however, was used in only 2% to 3% (Fig. 2).

Referral strategies

A total of 34% of the schools referred their patients to an external counselling clinic, 13% of the schools referred their patients to a telephone counselling service, and dental students in 11 schools (16%) provided counselling themselves. Forty dental schools (59%) didn't refer their patients for tobacco use cessation counselling (Fig. 3).

Integration of tobacco education in the dental school's curriculum

Forty-five (66%) out of 68 dental schools reported to have tobacco education implemented in their curriculum, while 23 dental schools (34%) reported not to have covered this topic. Out of these 45 dental schools, a total of 30 dental schools (67%) stated that their tobacco curriculum was mandatory, while 13 schools (29%) reported it was voluntary. No information about implementation was obtained from two (4%) of the schools (Fig. 4).

Theoretical content delivery

All 45 dental schools (100%) have implemented theoretical contents in their curricula (Fig. 5). Topics covered include

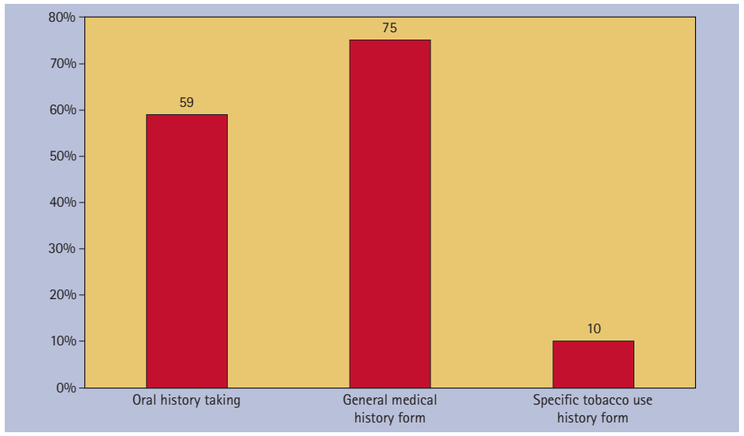

Fig. 1 Frequency of tobacco use history taking obtained by oral history taking, a general medical history form, or a specific tobacco use history form

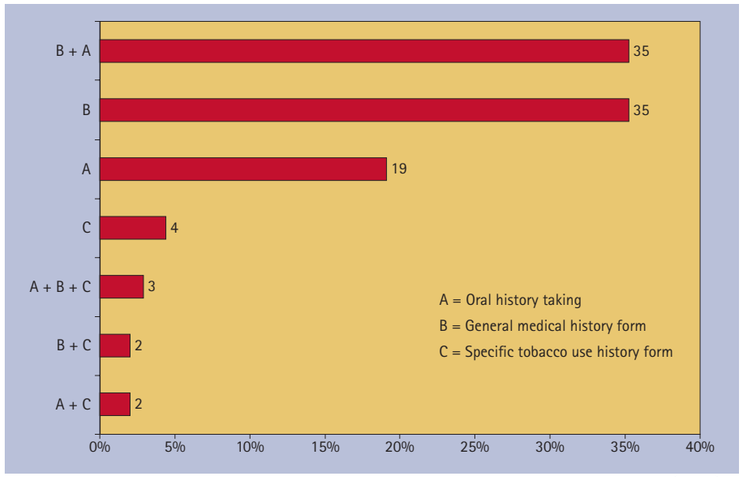

Fig. 2 Percentage of combinations from tobacco use history taking implemented in 68 (35%) out of 197 European dental schools

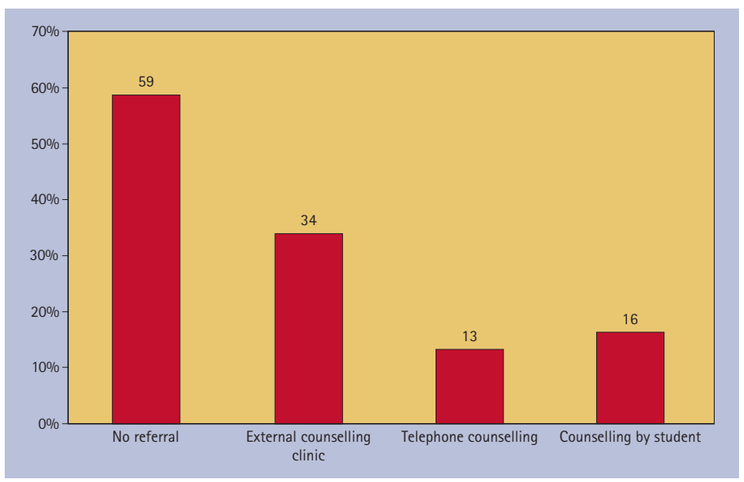

Fig. 3 Frequencies of tobacco use cessation counselling referral strategies

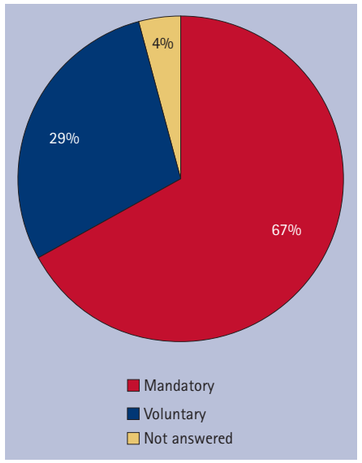

Fig. 4 Frequency of both mandatory and voluntary tobacco education in 45 European dental schools with implemented tobacco education

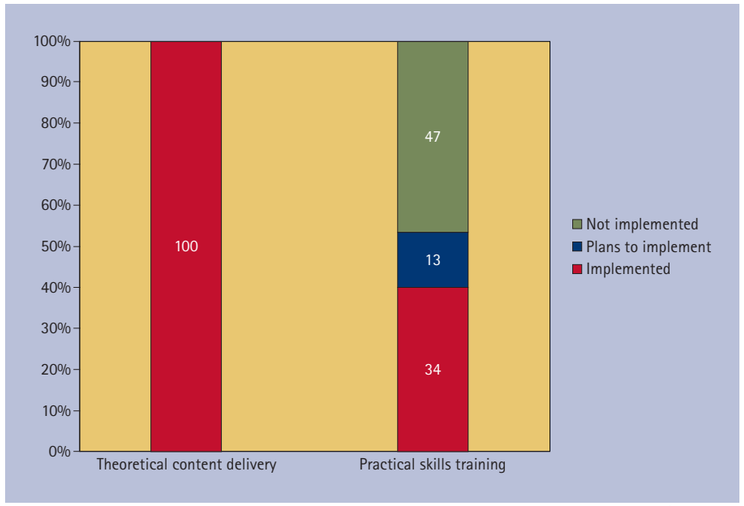

Fig. 5 Implementation of theoretical content delivery and clinical skills training in 45 (out of 68 responding) European dental schools with implemented tobacco education

biological effects of tobacco use (82%), genetic predisposition for nicotine dependence (31%), tobacco culture and policy (53%), psychological aspects of tobacco use (62%), diagnosis of conditions of the oral cavity due to tobacco use (87%), prevention and treatment of tobacco use, and dependence (76%). Contents for the latter include methods of motivating patients in their attempts to quit (58%), communication skills (69%) and effective pharmacotherapies for tobacco use cessation (60%).

Practical skills training (clinical competence)

Only 18 (40%) out of 45 schools have introduced practical skills training for tobacco use cessation counselling to their students. Six (13%) dental schools have planned to introduce this topic in future curricula (Fig. 5).

Students are trained in providing brief tobacco interventions in 27% of the 45 surveyed schools. Furthermore, the students are educated to provide both behavioural support (20%) and pharmacotherapy (20%), respectively.

Student assessment

Almost all of the 45 dental schools assessed their students' theoretical knowledge (93%). However, practical training was only assessed in 29%. Two dental schools did not incorporate either theoretical or practical assessment of tobacco prevention and cessation skills. Theoretical and practical exams mostly took place throughout the terms, while final exams were used in 27% for theoretical content and in 4% for practical training, respectively.

DISCUSSION

Dentists by and large report they are ill-equipped to counsel tobacco-using patients to quit because of lack of knowledge and confidence in the effectiveness of such measures. Repeated surveys in the UK since the 1990s have highlighted a considerable need for improvement in the manner and extent of provision of health advice on smoking cessation.[13,14] By 2006, only 10% of UK dentists reported they had received any formal training in tobacco cessation intervention strategies.[15] The lack of confidence and deficiency of knowledge can be tracked to lack of adequate training in tobacco cessation as a component of the dental undergraduate curriculum. If dentists are to impart tobacco cessation counselling on a regular basis, such skills must become a more conventional component of the dental curriculum and also receive regular updating after they practice. Among EU dentists a survey at the turn of the century reported that 68% of the respondents agreed that offering patients advice on tobacco cessation was the duty of every dentist.[16] Previous surveys had inquired on curricula in dental schools in Europe but had been limited to few selected schools.[13]

In an assessment of smoking cessation activities in European dental schools conducted in 1993 and followed-up in 2003, McCartan & Shanley[17,18] found that though there were considerable improvements in tobacco education over the ten-year period regarding the health and oral effects of tobacco use, there remained a need for improvement in tobacco cessation training and clinical interventions. This study also revealed stark differences in tobacco education between northern and eastern dental schools and southern European schools, with the southern schools lagging behind in all indicators. In another study,[19] students attending a United Kingdom dental school reported constantly asking patients about tobacco use. However, only one third of the students reported regularly offering smoking cessation advice to their patients and only half felt their dental education adequately prepared them for offering cessation advice.[19] This lack of confidence to provide tobacco cessation is mirrored in a similar study of medical students in Germany and England.[13]

In this study, an internet website for the delivery of the electronic survey and e-mail correspondence were used to gather data from European dental schools. The use of these resources for the online transfer of data greatly facilitated the survey process by simplifying data collection and making the study more cost-effective. However, one criticism of the present study may be that the survey was only made available in the English language, which may partially explain its relatively low return rate (35%). Furthermore, in comparison with the above mentioned studies by McCartan & Shanley,[17,18] our survey consisted of five pages, while their shorter two-page survey on policies and practices of European dental schools resulted in the increased response rates of 64% (1995) and 72% (2005) respectively. Consequently, we feel future survey instruments should be kept relatively short and made available in a variety of European languages.

In our survey of 68 European dental schools, administration reported that their patients under the care of dental students are frequently asked about tobacco use. However, the format and the way this information is collected varies from school to school and only 10% of the schools use a specific tobacco use history form for this purpose. The most common way of collecting tobacco data from patients under care is by combining relevant questions to the patient's general medical history form. While this is a satisfactory way of collecting data, the level of information gathered could differ and it would be desirable to design a common format for use in dental schools in Europe by incorporating information on both frequency and duration of tobacco use, collecting information on the type of tobacco (smoked or smokeless) and whether the person smokes cigarettes, cigars, pipes or hand-rolled tobacco. Furthermore, any attempts to quit and their successes need to be recorded.

The weakest aspect of tobacco cessation activity noted in the survey was the system of referral in the schools used by students participating in tobacco prevention and cessation activities. Only 16% of the schools confirmed some counselling of their patients and fewer than 16% referred patients elsewhere. It has been substantiated that referral to smoking cessation counsellors increases cessation rates by nearly fourfold, because trained counsellors are able to provide more in-depth counselling and recommend appropriate medications. Use of approved medications for example, nicotine replacement therapy, bupropion and vareniciline that are effective across a broad range of populations could be administered when indicated. This would be practically feasible if dental students interact with patients' general physicians or local smoking cessation counsellors.[20]

A survey conducted among Australian dental students demonstrated that 82% of the students were expected to give smoking cessation advice to their patients. However, teaching of risks from tobacco use in the aetiology of oral cancer was given higher priority (73%) than teaching of smoking cessation counselling (45%).[21] A similar difference was found in our study as 82% of European dental schools reported to provide teaching of biological effects from tobacco use but practical training was reported by only 40% of the schools.

Dental school-based tobacco use cessation programmes have been described from Canada, Israel and more recently from the USA.[22,23] One US school reported the success of smoking cessation by the undergraduate students after a dedicated tobacco cessation counselling study.[23] As a result of student interventions, 22% of patients reported quitting entirely, although 51% made a commitment at the time of intervention. Another 14% decreased their tobacco use. These results are very encouraging and indicate that it is possible to change the culture within educational institutions and get their student body to participate in tobacco use cessation counselling, thereby receiving the required skills and training.

Simple interventions can increase quit rates in primary and secondary care settings. These interventions are defined as those that combine the following strategies known as the '5 A's' described by Fiore *et al.*:[25]

- Ask – systematically identify all tobacco users at every visit
- Advise – strongly urge all tobacco users to quit
- Assess – determine willingness to make a quit attempt
- Assist – aid the patient in quitting (provide counselling and medication)
- Arrange – ensure follow-up contact.

A recent survey of Floridian dentists reported 88% were not familiar with the 5A concept.[26] A comprehensive model for smoking prevention and cessation applicable for both dental and hygiene education schools has been presented by Ramseier[26] and Davis *et al.*[11] These approaches were discussed in detail in two European workshops on tobacco prevention and cessation for oral health professionals.[27,28]

The dental profession and the regulators expect a high quality of care to be provided for these patients. Tobacco is a major risk factor for both periodontal disease and oral cancer and helping patients to quit tobacco use is an important strategy to both prevent and control these diseases.[7,30] Any guidelines for educators should consider inclusion of tobacco education in their domains.

Among health professional schools, dentistry is not alone in its lack of readiness to include tobacco education to their students. Richmond *et al.*[31] twice surveyed medical schools in 171 countries ten years apart to explore whether and how medical students are taught about tobacco. They reported an encouraging increase in the extent of teaching but commented that a great deal more needs to be done, echoed by other authors who surveyed US medical schools.[32,33] In one of these reports, Ferry *et al.*[32] reported that 69% of the US medical schools did not require clinical training in smoking cessation skills and even among those that taught formal programmes, these averaged less than one hour of instruction per year. We note in our EU survey, only 40% of the schools surveyed taught practical tobacco cessation skills. An optimal curriculum content on tobacco education for dental and hygiene students was earlier presented by us.[34] If there are competing issues in curricula not to include subjects like tobacco education, dental educators need to consider whether there is a place for e-learning in clinical skills teaching and evaluating the students' knowledge and performance through practice during the five-year programme. We propose to produce a WEB-based curriculum including videos to develop clinical skills in communication that could be adapted by European dental schools in the future.

Studies on effectiveness of tobacco cessation in dental settings have shown that success rates which can be achieved following training could be modest, on average 10% quitting over 9-12 months.[35,36] These quit rates are much higher than population quit rates without health interventions. Furthermore, when multiplied by the number of attendees in dental practices, the public health impact of dentists' interventions could be enormous.[37,38]

CONCLUSION

Clearly, though the harmful effects of tobacco are widely known, dental and medical institutes continue to graduate practitioners inadequately prepared to assist patients in quitting tobacco use. A new tobacco dependence education paradigm needs to be embraced among European dental education and institutions that not only adequately educates students in knowledge of tobacco dependence but provides practice of evidence-based behavioural approaches to promote cessation interventions. Even though theoretical tobacco education appears to be acknowledged by many European dental schools, further practical training of dental students in tobacco use prevention and cessation skills needs to be encouraged.

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