

Tobacco Use Prevention and Cessation in Dental and Dental Hygiene Undergraduate Education

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Abstract: Oral health care professionals are aware of their responsibility to advise patients to stop using tobacco. However, they do not feel sufficiently prepared to help their patients to quit, and consequently are not confident in providing these preventive measures. This fact reflects the lack of emphasis on tobacco cessation in both dental and dental hygiene undergraduate education. It may therefore be assumed that improvement of dental and dental hygiene education in tobacco use cessation counselling may result in increased self-confidence and frequency of its provision.

The importance of making space in the curriculum for tobacco use prevention and cessation has to be emphasised. Dental schools and dental hygiene programmes have to be reminded of the key role the dental profession has in tobacco control. Next to the public health aspect of tobacco control, such involvement may be both an ethical and a legal responsibility.

The implementation of effective tobacco use prevention and cessation in a dental educational setting requires a multidisciplinary approach involving the school's entire teaching personnel and external experts. In general, a knowledge base attained through lecture, Problem-Based Learning (PBL), or E-Learning, and clinical skills attained through clinical instructions and practices is required. It is suggested that curriculum content should include (1) the biological effects of tobacco use, (2) the history of tobacco culture and psychosocial aspects of tobacco use, (3) prevention and treatment of tobacco use and dependence, and (4) development of clinical skills for tobacco use prevention and cessation.

Key words: tobacco use prevention, tobacco use cessation, dental education, dental hygiene education, smoking cessation, undergraduate education

Oral Health Prev Dent 2006; 4: 49-60.

Submitted for publication: 01.12.05; accepted for publication: 09.01.06.

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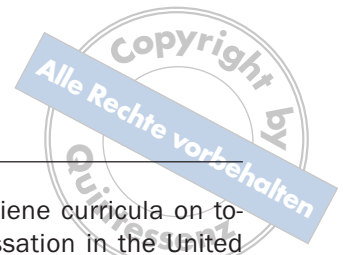
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For many years, the detrimental effects of tobacco use on general and oral health have been documented in the literature. As cited in a vast number of articles, tobacco use is 'the most preventable cause for disease and premature death worldwide' (US Department of Health and Human Services, 1964-2004) (USDHHS, 2004). Earlier findings in medicine have been supplemented by studies in dentistry, focusing on changes in the oral mucous membrane (Warnakulasuriya, 2004; Warnakulasuriya, 2005) as well as the periodontal tissues (Johnson and Slach, 2001; Palmer et al, 2005; Tonetti, 1998). There is growing evidence that tobacco use cessation reduces the incidence of a variety of diseases, limits the severity of disease progression, and improves treatment outcome. It is well established that successful treatment of tobacco dependence reduces the risk of oral cancer as reviewed by Warnakulasuriya (2005) (War-



nakulasuriya et al, 2005) and improves the outcome of periodontal therapy (Preshaw et al, 2005). In addition, next to plaque control, tobacco use cessation is shown to be the most important measure for both the treatment and prevention of chronic periodontitis (Ramseier, 2005). Recently, the consensus report of the Fifth European Workshop on Periodontology suggested that 'smoking cessation is an integral part of preventive measures for periodontitis' (Lang et al, 2005).

Current professional oral health care mainly comprises operative dental procedures accompanied by preventive measures. Surveys conducted in private dental practices and in dental schools asking dentists, dental hygienists, and students of dentistry and dental hygiene about their attitudes toward tobacco use cessation repeatedly reveal that oral health care professionals know about their responsibility to advise patients to quit using tobacco (Nagy et al, 2004; O'Shea et al, 1992; Rikard-Bell et al, 2003; Victoroff et al, 2004; Yip et al, 2000). However, according to these surveys, oral health care professionals do not feel sufficiently prepared to help their patients stop using tobacco, and consequently are less confident in providing these preventive measures than when applying operative dentistry. Thus tobacco users seeking help to stop their habit are less successfully assisted in dental and dental hygiene settings. In conclusion, these findings reflect the lack of emphasis on preventive measures in both dental and dental hygiene undergraduate education. It may therefore be assumed that improvement of dental and dental hygiene education in tobacco use cessation counselling may result in increased self-confidence and frequency of its provision. The following section reviews the development of dental and dental hygiene education in tobacco use prevention and cessation.

TOBACCO USE PREVENTION AND CESSATION IN DENTAL AND DENTAL HYGIENE EDUCATION

The first tobacco use prevention and cessation strategy adapted for dental clinicians entitled 'The dentist's role in helping patients to stop smoking' was published in 1970 by Arden G. Christen (Christen, 1970). Six years before, the general assembly of the American Dental Association (ADA) 'adopted a resolution that ADA members be encouraged to inform their patients of the health hazards of the use of tobacco and, especially with young people, warn against acquiring the habit of cigarette smoking' (ADA, 1964).

Early dental and dental hygiene curricula on tobacco use prevention and cessation in the United States mainly included the instruction on the hazards of tobacco use on general and oral health, followed by presentation of brief intervention protocols. Less than a third of US dental schools and dental hygiene programmes reported teaching counselling techniques in 1990 (Fried and Rubinstein-DeVore, 1990). This study also reported that the use of nicotine substitutes was incorporated more frequently in dental curricula (34.4%) than in dental hygiene programmes (17.4%). The content on tobacco use cessation strategies enabled students to advise and assist their patients to kick the habit. As Guba reported in the 1990 JADA supplement on the First National Dental Symposium on Smoking Cessation 1989 in the United States, a complete patient-oriented smoking cessation programme seemed to be applicable for dental school clinical settings (Guba, 1990). This programme consisted of six objectives, as follows:

- Objective 1: The dental clinic patient reception areas will provide a non-smoking atmosphere where the dental faculty, staff and students actively serve as non-smoking, health-oriented role models.
- Objective 2: Information will be provided to patients concerning the risks of continued smoking and the substantial benefits of quitting.
- Objective 3: Information, guidance and support will be offered to those patients who want to quit. The guidance included recordkeeping for patient follow-up.
- Objective 4: The patient will be referred either to a formal behaviourally or psychologically oriented group or to a private smoking cessation programme.
- Objective 5: Patients who have previously entered the quit-smoking programme will be followed up at subsequent appointments to ascertain what specific cessation and maintenance strategies they have used and whether they have achieved their goals.
- Objective 6: The overall clinical smoking cessation programme will be critiqued at periodic intervals to assess progress and address problems.

Furthermore, this article indicated that the implementation of such a programme is both timely and appropriate, since dental schools were requested to

teach chemical dependency topics, such as nicotine addiction. Subsequently in 1991, the curriculum guidelines for predoctoral preventive dentistry were published in the *Journal of Dental Education*, which listed tobacco cessation counselling as a specific behavioural objective, and tobacco use as an identified risk factor for oral cancer (Anonymous, 1991). Notable for the early nineties, it did not, however, list tobacco use as an identified risk factor for periodontal disease. In 1994, a nationwide survey was conducted in US dental schools, assessing dental education on tobacco use cessation counselling. It was found that almost all dental schools in the US adapted their tobacco policies reflecting a nationwide movement to restrict the use of tobacco in public settings (Grinstead and Dolan, 1994). Also, the percentage of US dental schools offering no tobacco use cessation curriculum had dropped to 7%, compared to 34.7% in 1989 (Fried and Rubinstein-DeVore, 1990). Forty-one per cent of dental schools included only one to three hours of lecture in their tobacco use cessation curriculum. Since Ferguson et al (1984) reported that private practice dentists feel unprepared to assume the role of tobacco use cessation counsellors, it was concluded that more curriculum content for dental students was needed (Ferguson et al, 1984; Grinstead and Dolan, 1994). Results from a survey conducted in Ireland revealed that Irish dental students were more likely to smoke than Irish dentists but less likely to smoke than the general Irish population (McCartan et al, 1993). Subsequently, a European-wide survey was conducted by the same authors in 1994 to ascertain policies and practices of European dental schools in relation to smoking and the teaching of the relationship of smoking to the aetiology and primary prevention of oral cancer. The analysis of the responses revealed the following (McCartan and Shanley, 1995):

- A majority of responding schools taught the role of smoking in the aetiology of oral cancer and expected their students to take smoking histories from patients.
- Half of the responding schools taught their students how to give quit smoking advice to patients.
- Half of the responding schools expected their students to give tobacco use cessation advice to patients.

Many European, US and Canadian dental schools have adopted tobacco policies and practices. Still, some 25% of responding dental schools in the US and in Canada did not address tobacco use in their

dental schools' health history forms (Yellowitz et al, 1995). These authors state that the school and the dental practitioner 'may be both legally and ethically negligent in not securing this information' (Yellowitz et al, 1995).

In 1993, the first implementation in student clinics of a tobacco cessation programme developed by the US National Cancer Institute (NCI) (Mecklenburg et al, 1990) was reported and evaluated by Barker et al (1995). The programme objectives were (1) to encourage dental students to ask patients about tobacco habits, (2) advise patients against tobacco use, and (3) assist interested patients in the tobacco cessation process (Barker et al, 1995). Both faculty and dental students were actively involved in the implementation process with follow-up lectures and feedback sessions to discuss perceived barriers at regular intervals. Out of 7,617 patients, all 1,650 current smokers (21.7%) were advised to quit, out of which 110 patients (6.7%) were given a 30-minute initial cessation counselling. Fifty-three patients (48.2%) kicked the habit within three months of their quit date, 75% were still tobacco-free after three to 12 months, and 38% after more than 12 months. The authors concluded that this implementation process was successful and may also be applicable to other dental schools.

The tobacco use cessation activities in US dental and dental hygiene student clinics were assessed again in 1998. Comparison with the results from the surveys mentioned above is interesting: 47% of dental schools (9% in 1989) and 55% of dental hygiene programmes (38% in 1989) did incorporate tobacco use cessation activities (Barker and Williams, 1999).

A dental school-based, tobacco use cessation programme, adapted from Fiore et al (1996), was implemented and evaluated by the Faculty of Dentistry, University of Manitoba, Canada (Gelskey, 2001; Gelskey, 2002). Pre- and post-programme telephone interviews of tobacco-using patients assessed tobacco use cessation interventions provided by dental students. A significantly greater proportion of patients received education in the post-programme compared to those in the pre-programme regarding health consequences associated with tobacco use as well as advice to quit. The introduction of this programme resulted in an improvement of 11.7% for tobacco-related general and oral health consequences and of 23% for advice to quit.

A comprehensive model for smoking prevention and cessation applicable for both dental and dental hygiene education has been presented by Ramseier (2003). This tobacco use cessation strategy is based



on: (1) the model 'stages of change' (or transtheoretical model) by Prochaska and DiClemente (1983); (2) the Five As (Ask, Advise, Assess, Assist and Arrange) by Fiore et al (2000) using nicotine replacement therapy (NRT) (Fiore et al, 1996); and (3) the main principles of Motivational Interviewing techniques by Miller and Rollnick (2002). In brief, the model includes recording every patient's tobacco use status, followed by a short intervention of not more than five minutes. The main aim of these interventions is to help tobacco-using patients to move from pre-contemplation to contemplation, and further to preparation, action, and maintenance stages. The routine use of a tobacco-use history form as well as a record sheet to monitor tobacco-use interventions is suggested.

DENTAL AND DENTAL HYGIENE STUDENTS' ATTITUDES ON DENTAL TOBACCO USE CESSATION EFFORTS

A first survey, conducted in four US upstate New York schools of dental hygiene, assessed the dental hygiene students' conceptions of their future role in smoking cessation (O'Shea et al, 1992). One interesting finding of this study was that approximately one-third of the current smoking and ex-smoking students indicated that their smoking habits had changed after starting dental hygiene training. Furthermore, 'current smokers were as likely as non-smokers to agree that they would help patients who want to quit but were much less likely to endorse active intervention' (O'Shea et al, 1992). In conclusion, the number of non-smoking dental hygienists should be increased to energise the intervention against tobacco use.

Similar to the findings by Barker et al (1995), the assessment of dental students' attitudes toward smoking cessation guidelines revealed potential barriers to the provision of tobacco cessation counselling (Yip et al, 2000). Consequently, therefore, only 69% of students asked patients about smoking, 58% advised cessation, 24% offered assistance, and 22% provided follow-up on a routine basis. The barriers were reported as patient resistance, lack of confidence in the ability to help patients quit, and the amount of time required. However, dental students undergoing formal training in tobacco use cessation were more likely to provide counselling, and they seemed to feel more confident.

DENTAL SCHOOL AND DENTAL HYGIENE PROGRAMME FACULTY ATTITUDES ON DENTAL TOBACCO USE CESSATION

Institutional workplace smoking policies evidently influence the schools' attitude and preparedness on teaching dental tobacco use cessation (Cheney, 1990; McCartan and Shanley, 1995; McCartan and Shanley, 2005). These reports also elucidated the fact that both dental and dental hygiene school faculty serve as role models for their students, and therefore, participation in tobacco use cessation programmes for faculty and students to eliminate their smoking habits was suggested.

Weaver et al (2002) reported a survey conducted by the American Dental Association (ADEA) about tobacco prevention and cessation in the 54 dental schools in the US (Weaver et al, 2002). The authors reported the barriers to the schools' efforts in preparing students to intervene in their patients' tobacco use. The survey revealed the lack of faculty preparation. Seventy-two percent of the schools said that they had a need for faculty training on tobacco use prevention techniques, whereas 93% of the schools reported the same needs for faculty training on tobacco use cessation skills. Considering the fundamental role of dental educators in teaching their students about tobacco use prevention and cessation skills, the need for faculty preparation appears to be urgent.

PRACTICE BEHAVIOURS OF ALUMNI TRAINED AS DENTAL STUDENTS IN TOBACCO USE CESSATION

Alumni of the University of Missouri-Kansas City School of Dentistry trained as dental and dental hygiene students in tobacco use cessation intervention were surveyed in an evaluation of their work (Barker et al, 2001). The authors reported promising results regarding the frequency of tobacco use interventions carried out in the private practice settings: 97.9% of dental hygienists and 87.4% of dentists advised their patients to quit. However, only 12.5% of dental hygienists (DH) and 7.1% of dentists (DMD) encouraged their patients to set a quit date. They both gave self-help materials (DH: 35.6%, DMD: 32.0%), referred the patient to a cessation counsellor or a support group (DH: 18.8%, DMD: 22.1%), or recommended nicotine replacement therapy (DH: 68.8%, DMD: 46.4%). Factors influencing the clinical application of tobacco use intervention counselling in the dental practice after graduation were the following:

- The scientific evidence of tobacco use effects on oral health (DH: 94%, DMD: 94%),
- the School of Dentistry's tobacco use cessation clinical programme (DH: 78%, DMD: 83%), and
- reading professional journals (DH: 78%, DMD: 63%).

Interestingly, the dental school teaching faculty did not encourage the students in the clinic (DH: 55%, DMD: 42%) to provide such counselling to their patients. This lack of support may indicate that the faculty was not trained in clinical tobacco use cessation previous to their own graduation.

In a study by Monson and Engeswick (2005), the percentage and frequency of dental hygiene graduates providing tobacco use cessation counselling were evaluated after receiving training for counselling during their education (Monson and Engeswick, 2005). Their findings indicate that dental hygienists who received tobacco use cessation education during their training do not provide cessation counselling to a high percentage of their patients even though they believe in the value of such activity. However, dental hygienists are more likely to provide tobacco use cessation counselling to patients with periodontal disease than to other patients.

Even though several publications on tobacco use cessation strategies for the dental profession reported a variety of improvements, oral health-care providers seem to hesitate to be involved in the challenge of preventing and treating tobacco-related health issues. However, their key role in tobacco control appeared to be accepted (Cohen et al, 1987; Frese and Schierling-Wilkes, 1987; Fried, 1987; Gerbert et al, 1989; Klein et al, 1988; O'Shea and Corah, 1984; O'Shea et al, 1987; Secker-Walker et al, 1987) since most patients (67% – 72%) reported their interest in receiving help from their dental hygienist or dentist to stop tobacco use (Severson et al, 1990a; Severson et al, 1990b).

WHAT STRATEGIES WILL HELP DENTAL SCHOOLS AND DENTAL HYGIENE PROGRAMMES TO IMPLEMENT TOBACCO USE PREVENTION AND CESSATION IN THEIR CURRICULA?

The importance of making space in the curriculum for tobacco use prevention and cessation has to be emphasized. Deans of dental schools and dental hygiene programmes as well as the schools' department chairs have to be reminded of the key role the dental profession has in tobacco control. Next to the public health aspect of tobacco control, such involve-

ment may be both an ethical and a legal responsibility for dental schools and dental hygiene programmes.

Public health authorities, international and national dental and dental hygiene organisations, and the Oral Health Network on Tobacco Prevention and Cessation (OHNTPC, www.tobacco-oralhealth.net) may provide dental schools and dental hygiene programmes with examples of how other schools have successfully changed their curricula. Additionally, private oral health care companies, public health organisations and international and national dental and dental hygiene organisations should be encouraged to provide funding for new curricular and training needs.

The curricular change will involve a multitude of departments within the dental and dental hygiene schools. A school-wide survey may help to assess the present curriculum and identify the needs for additional internal or external resources. At this stage, it may be appropriate (1) to determine a school-internal tobacco use cessation coordinator, (2) to contact the local authorities to determine the epidemiology of tobacco product use in the geographic area, and (3) to establish mutually beneficial relationships with tobacco use cessation directors of university hospitals or tobacco use cessation clinics near the location of the school. In addition to the curricular change, it may be beneficial for the dental school and the dental hygiene programme (1) to establish a written tobacco policy, and (2) to ban tobacco use from clinical, non-clinical and public areas.

All dental and dental hygiene students, teaching personnel and staff should ideally be tobacco-free and, therefore, if they use tobacco, should be offered individual internal or external tobacco use cessation programmes.

HOW CAN EFFECTIVE TOBACCO USE PREVENTION AND CESSATION BE IMPLEMENTED IN THE UNDERGRADUATE CURRICULUM OF DENTISTRY AND DENTAL HYGIENE?

The implementation of effective tobacco use prevention and cessation in a dental educational setting requires a multidisciplinary approach involving the school's entire teaching personnel. In addition to the school's internal teaching resources, it may be necessary to connect to external expertises, ie. in the areas of psychology, behaviour change therapy or pharmacology.

In general, a knowledge base attained through lecture, problem-based learning (PBL), or E-learning and



clinical skills attained through clinical instructions and practices are required (see Table 1). Regarding the acquisition of the knowledge base, it may be appropriate to invite external experts (1) to teach dental and dental hygiene students or (2) to train the internal teaching personnel at the school. Regarding the training of clinical skills, it is suggested that instructors and students should be taught the following practice, and then assessed in how they apply it:

- ask all patients if they use tobacco,
- advise all patients who use tobacco to quit,
- assess all patients who use tobacco if they are willing to quit,
- assist all tobacco-using patients who are willing to quit through proven effective treatments,
- provide a brief intervention to patients who find quitting difficult, so as to increase their motivation to quit, and
- arrange follow-up visits or phone calls to evaluate success or the need for further assistance.

Financial compensation for expenses incurred in the school's cessation counselling service, whether from public or private sources, should be comprehensive and regularly updated in the patient's record.

WHAT CONTENT RELATED TO TOBACCO USE PREVENTION AND CESSATION SHOULD BE INCLUDED IN UNDERGRADUATE EDUCATION OF DENTISTS AND DENTAL HYGIENISTS?

It is suggested that curriculum content should include (1) the biological effects of tobacco use, (2) the history of tobacco culture and psychosocial aspects of tobacco use, (3) prevention and treatment of tobacco use and dependence, and (4) development of clinical skills for tobacco use prevention and cessation.

Table 1 summarizes the content related to tobacco use prevention and cessation and suggests the teaching methods for dental and dental hygiene undergraduate curriculum (see Table 1). The incorporation of as much content on prevention and cessation into the training of clinical skills as achievable is recommended.

The following section reviews the content related to tobacco use prevention and cessation according to Table 1 and refers to scientific journal articles, textbooks, online resources, or, if no such resource was found, provides an example. Please note that all the

following URLs are provided, updated, and supplemented at <http://www.tobacco-oralhealth.net/> links.

Biological effects of tobacco use

Impact of tobacco use on systemic health

- http://www.cdc.gov/tobacco/factsheets/HealthEffectsOfCigaretteSmoking_Factsheet.htm

Impact of tobacco use on oral and dental health

- http://www.who.int/oral_health/publications/ohpd01/en/
- http://www.fdiworldental.org/public_health/5_Otobacco.html
- <http://www.ada.org/public/topics/tobacco.asp>
- <http://www.dentalarticles.com/authors/15.php>

Tobacco use and nicotine dependence

- <http://www.umtrn.sph.umich.edu/>
- http://www.srnt.org/meeting/2003/03_programme.html
- Treating Tobacco Use And Dependence (Fiore et al, 2000)

Tobacco culture/psychosocial aspects of tobacco use

History of tobacco products

- <http://smokingsides.com/docs/hist.html>
- <http://www.tobacco.org>

Tobacco use patterns

- <http://oas.samhsa.gov/NHSDA/tobacco/highlights.htm>

Tobacco prevention organisations

- <http://www.cdc.gov/tobacco/global/>
- <http://www.metrokc.gov/health/tobacco/>
- <http://www.dshs.state.tx.us/tobacco/default.shtm>

Tobacco industry, marketing and promotion

- http://www.cdc.gov/tobacco/factsheets/Tobacco_Industry_Marketing_Factsheet.htm

Tobacco prohibition and control policies

- <http://www.seangabb.co.uk/pamphlet/faghist.htm>
- <http://www.pierrelemieux.org/artkessler.html>
- <http://www.cato.org/pubs/pas/pa-157.html>

Table 1 Dental and dental hygiene curriculum content

	Knowledge attained through lecture / problem-based learning (PBL) / E-learning	Skills attained through clinical instruction (CI) / practice (P)
<p>Biological effects of tobacco use</p> <ul style="list-style-type: none"> • Impact of tobacco use on systemic health • Impact of tobacco use on oral and dental health <ul style="list-style-type: none"> o Oral mucous membrane o Periodontal and peri-implant tissues o Oral hygiene and dental aesthetics o Saliva, dental caries and others o Pathogenesis and disease causation • Tobacco use and nicotine dependence <ul style="list-style-type: none"> o Initiation and progression of tobacco use o Individual tobacco use profile o Nicotine metabolism o Physical dependence o Psychological dependence o Withdrawal symptoms o Biochemical validation 	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✓ (CI)</p> <p>✓ (CI)</p> <p>✓ (CI)</p> <p>✓ (CI)</p> <p>✓ (CI)</p> <p>✓ (CI)</p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>
<p>Tobacco culture / psychosocial aspects of tobacco use</p> <ul style="list-style-type: none"> • History of tobacco products • Tobacco use patterns • Tobacco prevention organizations • Tobacco industry, marketing and promotion • Tobacco prohibition and control policies 	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	
<p>Prevention and treatment of tobacco use and dependence</p> <ul style="list-style-type: none"> • Strategies for prevention of tobacco use • Methods of motivating quit attempts in patients • Behavioural support for tobacco use cessation • Effective pharmacotherapies for tobacco use cessation • Communication skills • Integration of tobacco use cessation into dental practice 	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	<p>✓ (P)</p> <p>✓ (P)</p> <p>✓ (P)</p> <p>✓ (P)</p> <p>✓ (P)</p> <p>✓ (P)</p>

Prevention and treatment of tobacco use and dependence

Strategies for prevention of tobacco use

Non- and former tobacco users should be congratulated and motivated to remain non-users. It is essential that non-tobacco-using teenagers should be praised and motivated not to start.

Methods of motivating quit attempts in patients - example: 'motivational interviewing'

Recently, the effects of teaching dental students brief motivational interviewing (BMI) for smoking cessation counselling were assessed on standardised patients (Koerber et al, 2003). A practice-oriented

12-hour training period (three sessions) resulted in counselling activities in which students used more BMI techniques and patients were more actively involved. However, no changes were seen in other variables such as the students' sense of competence, their interest in undertaking counselling, and the effectiveness of the counselling to encourage patients to cease tobacco use.

To explain this explicit way of communication, two examples of smoking cessation counselling approaches are presented (see Table 2).

For more information about motivational interviewing, the reader is referred to the textbook of Miller and Rollnick (2002) and <http://www.motivationalinterview.org>.

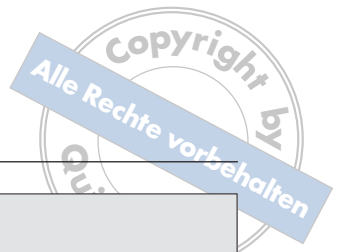


Table 2 Short dialogue with and without motivational interviewing	
The following dialogue without motivational interviewing, takes place in a dental practice between a female dentist (Dr.) and her patient (Mr. P):	Motivational interviewing, as in the following dialogue between a female dentist (Dr.) may bring the communication to a better position:
<p>Dr. "... Are you a smoker?"</p> <p>Mr. P. "Yes."</p> <p>Dr. "I strongly recommend that you stop smoking. You must know smoking is harmful..."</p> <p>Mr. P. thinks: ',I know it is harmful...'</p> <p>Dr. "... it can cause cancer, cardiac disease and..."</p> <p>Mr. P.: "I know this... ...but I can't stop!"</p>	<p>Dr. "... Are you a smoker?"</p> <p>Mr. P. "Yes."</p> <p>Dr. "Could you imagine stopping smoking?"</p> <p>Mr. P. "Maybe. Could you help me do that?"</p> <p>Dr. "I hear you say that you are uncertain about this. Yes, I can help you stop smoking. What personal advantages could you have from quitting tobacco?"</p>
This communication seems to be jammed. Because the dentist doesn't offer her patient any possibility to talk about put on the defensive.	Because the dentist continues to ask the patient several questions first, lines of communication himself, the patient is remain open. This way the patient can express his anxiety over failing to quit the habit. Subsequently, the dentist may continue to ask open questions encouraging the patient to give any answer but 'yes' or 'no'. Using this approach, the first step of motivational interviewing is done.

Behavioural support for tobacco use cessation - example: 'step-by-step approach'

As soon as a cigarette smoker is willing to kick the habit, as an example, the following four steps may be followed. For each step one appointment may be scheduled.

1. Appointment: Fill in the self-monitoring sheets
 - a. Note each cigarette smoked on the self-monitoring sheet (Fig 1).
Note in particular the time and the degree of importance for each cigarette smoked as well as a possible alternative behaviour.
 - b. Arrange a follow-up appointment seven to 10 days later.
2. Appointment: Evaluate self-monitoring sheets
 - a. Identify the less important cigarettes from the self-monitoring sheets.
Request the patient to eliminate the less important cigarettes as soon as possible.

- b. Determine the smoking behaviour.
Determine whether the patient 'smokes at regular intervals throughout the day' or 'smokes only at particular times'.
- c. Alternatives.
Request the patient to seek out his or her own cigarette substitutes for the following appointment.
- d. Arrange a follow-up appointment seven to 10 days later.
3. Appointment: Behaviour change counselling and determination of nicotine dependence
 - a. Ask if less important cigarettes are successfully kicked.
 - b. Commit to alternatives for cigarettes (replace smoking behaviour with different action).
 - c. Determine nicotine dependence according to the Fagerstrom test: very strong, strong, moderate, or weak (Fagerstrom, 1978) (Fig 2).
 - d. Fix the 'quit date' appointment.

Fig 1 The self-monitoring sheet helps to illustrate the patient's tobacco use behaviour. Using the information 'Time' it can be determined whether the patient uses tobacco regularly through the day or uses tobacco only at specific times. Recommendations for nicotine replacement therapy (NRT) will be based on this information. The entry 'How much did I need it?' helps to detect unimportant cigarettes that subsequently should be eliminated. With the information 'Alternative', behaviour change and tobacco product replacement will be addressed. This form can be downloaded in Microsoft Word format at www.dental-education.ch/smoking/downloads.

Fig 2 To evaluate nicotine dependence, three questions should be asked: 'Have you already attempted to give up smoking?'; 'How many cigarettes are you smoking daily?' and 'How long after waking up in the morning do you smoke your first cigarette?' (from Fagerstrom, 1978). Subsequently, four levels of dependence may be detected: very high, high, medium, and low. The answer with the highest nicotine dependence will determine the overall dependence (Fagerstrom, 1978).

Have you already attempted to give up smoking?	How many cigarettes do you smoke per day?	How long after waking up in the morning do you smoke your first cigarette?	Level of dependence
Yes	> 30	< 5 minutes	Very high dependence
Yes	20 – 30	5 – 30 minutes	High dependence
Yes	10 – 20	30 – 60 minutes	Medium dependence
No	< 10	> 60 minutes	Low dependence

4. Appointment: Stop-smoking day ('quit date')
 - a. Reconfirm cigarette alternatives.
 - b. Recommendation for nicotine replacement therapy (NRT) according to past smoking behaviour and the level of nicotine dependence (Fig 3).

Effective pharmacotherapies for tobacco use cessation

Kotlyar and Hatsukami (2004) have reviewed the management of nicotine addiction. The use of nicotine replacement therapy in dental tobacco use ces-

sation was recently reviewed by Ramseier (2003) and Christen et al (2003) (Christen et al, 2003; Ramseier, 2003).

Communication skills

Four primary communications strategies are suggested for the beginning of a behavioural change counselling: (1) ask open-ended questions, (2) affirm the patient, (3) reflect, and (4) summarise. For further information on communication methods for behavioural change counselling, the reader is referred



Recommendation for use of Nicotine Replacement Therapy (NRT)

Last name: _____ First name: _____

Level of nicotine dependence:
 very high
 high
 moderate
 low

Smoking behaviour:
 smokes regularly through the day
 smokes only at specific times

From Day 1 of quitting:

	Patch (mg per day)	Gum (number per day)	others (number per day)
1 st month			
2 nd month			
3 rd month			
After month 4			

Place, Date: _____ Signature: _____

Nicotine replacement	Low nicotine dependence	Moderate nicotine dependence	High nicotine dependence	Very high nicotine dependence
Patch		■	■ in combination with another nicotine preparation	■ in combination with another nicotine preparation
Gum	■ 2 mg	■ 2 mg	■ 4 mg	■ 4 mg
Sublingual tablets	■	■	■ in combination with patch	■ in combination with patch
Inhalator	■	■	■ in combination with patch	■ in combination with patch

Fig 3 This form can be downloaded in Microsoft Word format at www.dental-education.ch/smoking/downloads.

to the textbook of Miller and Rollnick (2002) (Miller and Rollnick, 2002).

Integration of tobacco use cessation into dental practice

Every member of the dental practice team plays an important role in the teamwork of smoking cessation counselling. With an appropriate assignment of tasks for every team member, patients will be welcomed professionally, asked regularly about their smoking status, and continuously monitored.

The initial and most important step is to identify tobacco users in the dental practice.

This can be accomplished by routinely handing out a smoking history form at the front desk, thus identifying many tobacco users. Additionally, their tobacco use history may be recorded regarding intensity, time since cessation, and duration of each period, and they may be asked about their readiness to quit. According to a number of authors, current and former tobacco users should be asked about (1) the type of tobacco used, (2) the intensity of use (quantity per day), (3) the duration of use (years), and (4) time since cessation (years) (Dietrich et al, 2004; Hoffmann et al, 2001; Ramseier, 2003).

HOW CAN DENTAL AND DENTAL HYGIENE SCHOOL TEACHING PERSONNEL (FACULTY) BE PREPARED AND MOTIVATED TO TEACH STUDENTS IN TOBACCO USE PREVENTION AND CESSATION COUNSELLING?

As stated above, training is suggested for all teaching personnel on tobacco use prevention and cessation techniques. The acquisition of the knowledge base and clinical skills may be assisted by internal or external experts in the field.

Additionally, cooperative means should be encouraged for teaching faculty development across the dental community. These might include workshops at annual professional conventions, special training conferences given by experts in the field, collaborative efforts involving several schools in a geographic region, or web-based training programmes.

Furthermore, the development of favourable publicity concerning tobacco control, including public recognition, such as awards, promotion or salary increments for successful teaching personnel, should be promoted.

REFERENCES

1. ADA. ADA resolution on cigarette smoking. *J Am Dent Assoc* 1964;69:776.
2. Anonymous. Curriculum guidelines for predoctoral preventive dentistry. *J Dent Educ* 1991;55:11,746-750.
3. Barker GJ, Taylor TS, Barker BF. Implementation of a tobacco cessation programme in the student clinics. *J Dent Educ* 1995;59:8,850-855.
4. Barker GJ, Williams KB. Tobacco use cessation activities in US dental and dental hygiene student clinics. *J Dent Educ* 1999;63:11,828-833.
5. Barker GJ, Williams KB, Taylor TS, Barker BF. Practice behaviors of alumni trained as students in tobacco use cessation interventions. *J Dent Hyg* 2001;75:2,165-169.
6. Cheney HG. Smoking policies of US dental schools. *J Dent Educ* 1990;54:3,216-217.
7. Christen AG. The dentist's role in helping patients to stop smoking. *J Am Dent Assoc* 1970;81:5,1146-1152.
8. Christen AG, Jay SJ, Christen JA. Tobacco cessation and nicotine replacement therapy for dental practice. *Gen Dent* 2003;51:6,525-532.
9. Cohen SJ, Christen AG, Katz BP, Drook CA, Davis BJ, Smith DM, Stookey GK. Counseling medical and dental patients about cigarette smoking: the impact of nicotine gum and chart reminders. *Am J Public Health* 1987;77:3,313-316.
10. Dietrich T, Bernimoulin JP, Glynn RJ. The effect of cigarette smoking on gingival bleeding. *J Periodontol* 2004;75:1,16-22.
11. Fagerstrom KO. Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. *Addict Behav* 1978;3:3-4,235-241.
12. Ferguson KJ, Logan HL, Pomrehn PR. Should dentists advise smokers to stop? *J Am Dent Assoc* 1984;109:4,593-594.
13. Fiore MC, Bailey WC, Cohen SJ. Smoking Cessation: Clinical Practice Guideline No. 18. ed. APN 96-0692. Rockville, MD: US Department for Health Care Policy and Research, 1996.
14. Fiore MC, Bailey WC, Cohen SJ. Treating Tobacco Use And Dependence. AHRQ Publication Mo. 00-0032 ed, ed. USPH Service. Bethesda, MD: ed. USD.o.H.a.H. Services, 2000.
15. Frese PA, Schierling-Wilkes J. Smokeless tobacco. The role of the dental hygienist. *Dent Hyg (Chic)* 1987;61:8,366-369.
16. Fried JL, Rubinstein-DeVore L. Tobacco use cessation curricula in the US dental schools and dental hygiene programmes. *J Dent Educ* 1990;54:12,730-735.
17. Fried RA. The dentist and preventive medicine: be all that you can be. *J Public Health Dent* 1987;47:2,68-70.
18. Gelskey SC. Tobacco-use cessation programmes and policies at the University of Manitoba's faculty of dentistry. *J Can Dent Assoc* 2001;67:3,145-148.
19. Gelskey SC. Impact of a dental/dental hygiene tobacco-use cessation curriculum on practice. *J Dent Educ* 2002; 66:9, 1074-1078.
20. Gerbert B, Coates T, Zahnd E, Richard RJ, Cummings SR. Dentists as smoking cessation counselors. *J Am Dent Assoc* 1989;118:1,29-32.
21. Grinstead CL, Dolan TA. Trends in US dental schools' curriculum content in tobacco use cessation 1989-93. *J Dent Educ* 1994;58:8,663-667.
22. Guba CJ. A patient-oriented smoking cessation programme conducted in a dental school clinical setting. *J Am Dent Assoc* 1990;Suppl:37S-39S.
23. Hoffmann K, Krause C, Seifert B. The German Environmental Survey 1990/92 (GerES II): primary predictors of blood cadmium levels in adults. *Arch Environ Health* 2001; 56:4,374-379.
24. Johnson GK, Slach NA. Impact of tobacco use on periodontal status. *J Dent Educ* 2001;65:4,313-321.
25. Klein JA, McDonald JL, Jr., Christen AG. Smoking cessation for dental patients: hygienists want to help! *J Indiana Dent Assoc* 1988;67:6,17-19.
26. Koerber A, Crawford J, O'Connell K. The effects of teaching dental students brief motivational interviewing for smoking-cessation counseling: a pilot study. *J Dent Educ* 2003; 67: 4,439-447.
27. Kotlyar M, Hatsukami DK. Managing nicotine addiction. *J Dent Educ* 2002;66:9,1061-1073.
28. Lang NP, Lindhe J, van der Velden U. Advances in the prevention of periodontitis. *J Clin Periodontol* 2005;32:Suppl 6,291-293.
29. McCartan BE, Sadlier D, O'Mullane DM. Smoking habits and attitudes of Irish dentists and dental students. *J Ir Dent Assoc* 1993;39:2,26-29.
30. McCartan BE, Shanley DB. Policies and practices of European dental schools in relation to smoking: the place of tobacco education in the undergraduate dental curriculum. *Br Dent J* 1995;179(8 Spec No):306-308.
31. McCartan BE, Shanley DB. Policies and practices of European dental schools in relation to smoking: a ten-year follow-up. *Br Dent J* 2005;198:7,423-425.
32. Mecklenburg RE, Christen AG, Gebert B. How to Help your Patients Quit Using Tobacco: A National Cancer Institute Manual for the Oral Health Team. Bethesda, MD: NIH pub no. 91-3191, 1990.
33. Miller WR, Rollnick S. Motivational Interviewing. New York: Guilford Press, 2002.

34. Monson AL, Engeswick LM. Promotion of tobacco cessation through dental hygiene education: a pilot study. *J Dent Educ* 2005;69:8,901-911.
35. Nagy K, Barabas K, Nyari T. Attitudes of Hungarian healthcare professional students to tobacco and alcohol. *Eur J Dent Educ* 2004;8:Suppl 4:32-35.
36. O'Shea RM, Corah NL. The dentist's role in cessation of cigarette smoking. *Public Health Rep* 1984;99:5,510-514.
37. O'Shea RM, Sielski KA, Creola P, Geraci GM, Haberer J, Sowinski JA. Helping patients quit smoking. The dental hygienist's role. *Dent Hyg (Chic)* 1987;61:8,373-377.
38. O'Shea RM, Sowinski J, Dietrich C, Johnson F, Bleck S. Hygiene Students' Conceptions of the Role of the Dental Hygienist in Smoking Cessation. *Health Values* 1992;16:44-50.
39. Palmer RM, Wilson RF, Hasan AS, Scott DA. Mechanisms of action of environmental factors - tobacco smoking. *J Clin Periodontol* 2005;32:Suppl 6:180-195.
40. Preshaw PM, Heasman L, Stacey F, Steen N, McCracken GI, Heasman PA. The effect of quitting smoking on chronic periodontitis. *J Clin Periodontol* 2005;32:8,869-879.
41. Prochaska JO, DiClemente CC. Stages and processes of self-change of smoking: toward an integrative model of change. *J Consult Clin Psychol* 1983;51:3,390-395.
42. Ramseier CA. Smoking prevention and cessation. *Oral Health Prev Dent* 2003;1:Suppl 1:427-439; discussion 440-422.
43. Ramseier CA. Potential impact of subject-based risk factor control on periodontitis. *J Clin Periodontol* 2005;32:Suppl 6:283-290.
44. Rikard-Bell G, Groenlund C, Ward J. Australian dental students' views about smoking cessation counseling and their skills as counselors. *J Public Health Dent* 2003;63:3,200-206.
45. Secker-Walker RH, Hill HC, Solomon LJ, Flynn BS. Smoking cessation practices in dental offices. *J Public Health Dent* 1987;47:1,10-15.
46. Severson HH, Eakin EG, Lichtenstein E, Stevens VJ. The inside scoop on the stuff called snuff: an interview study of 94 adult male smokeless tobacco users. *J Subst Abuse* 1990a; 2:1,77-85.
47. Severson HH, Eakin EG, Stevens VJ, Lichtenstein E. Dental office practices for tobacco users: independent practice and HMO clinics. *Am J Public Health* 1990b;80:12,1503-1505.
48. Tonetti MS. Cigarette smoking and periodontal diseases: etiology and management of disease. *Ann Periodontol* 1998; 3:1,88-101.
49. USDHHS. Healthy People 2010., ed. CfDCaP US Department of Health and Human Services, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. Atlanta, GA: USDHHS, 2004.
50. Victoroff KZ, Dankulich-Huryn T, Haque S. Attitudes of incoming dental students toward tobacco cessation promotion in the dental setting. *J Dent Educ* 2004;68:5,563-568.
51. Warnakulasuriya S. Smokeless tobacco and oral cancer. *Oral Dis* 2004;10:1,1-4.
52. Warnakulasuriya S. Bidi smokers at increased risk of oral cancer. *Evid Based Dent* 2005;6:1,19.
53. Warnakulasuriya S, Sutherland G, Scully C. Tobacco, oral cancer, and treatment of dependence. *Oral Oncol* 2005; 41:3,244-260.
54. Weaver RG, Whittaker L, Valachovic RW, Broom A. Tobacco control and prevention effort in dental education. *J Dent Educ* 2002;66:3,426-429.
55. Yellowitz JA, Goodman HS, Horowitz AM, al-Tannir MA. Assessment of alcohol and tobacco use in dental schools' health history forms. *J Dent Educ* 1995;59:12,1091-1096.
56. Yip JK, Hay JL, Ostroff JS, Stewart RK, Cruz GD. Dental students' attitudes toward smoking cessation guidelines. *J Dent Educ* 2000;64:9,641-650.