

Education of tobacco use prevention and cessation for dental professionals - a paradigm shift

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The use of tobacco continues to be a substantial risk factor in the development and progression of oral cancer, periodontitis, implant failure and poor wound healing. Dental and dental hygiene education providers have made great advances towards the incorporation of tobacco education into their curricula in recent years. Unfortunately, however, both medical and dental education research has consistently reported schools providing only basic knowledge-based curricula that rarely incorporate more effective, behaviourally-based components affecting long-term change. The limited training of oral healthcare students, at least in part, is reflected in practising dental professionals continuing to report offering incomplete tobacco interventions. In order to prepare the next generation of oral healthcare providers, this paper proposes a paradigm shift in how tobacco use prevention and cessation (TUPAC) may be incorporated into existing curricula. It is suggested that schools should carefully consider: to what level of competency should TUPAC be trained in dental and dental hygiene schools; the importance of establishing rapport through good communication skills; the core knowledge level for TUPAC; suggested instructional and assessment strategies; the importance of continuing professional education for the enhancement of TUPAC.

Key words: Smoking cessation education, dental education, dental hygiene education, tobacco cessation, undergraduate education

Research continues to affirm and expand the oral conditions associated with smoking including: adverse on periodontal disease¹, tobacco use and tooth loss², second-hand smoke and caries in preschool children³, smoking as a major risk factor for oral cancer^{4,5}, increased risk of implant failure⁶, and compromised outcome of root-coverage procedures⁷. In addition, reports from both the World Health Organisation (WHO) and the Centers for Disease

Control and Prevention (CDC) further inform us of the devastating general health-related morbidity and mortality experienced world-wide⁸⁻¹⁰ (*Table 1*).

Though medical and dental education has made progress in preparing the next generation of healthcare providers to offer effective tobacco cessation interventions, there seems to be an overall consensus that comprehensive tobacco cessation education is generally lacking in both Europe and the USA¹¹⁻¹³. Recent innovations

Table 1. Comparison of WHO European Region and United States Tobacco-Related Statistics

Estimates	WHO European Region ^A Est. Pop: 804,000,000	United States ^{B,C} Est. Pop: 304,000,000
Smoking Prevalence	28.6%	19.8%
Annual Smoking-related Deaths	1.6 mil	443,000
Years of Potential Life Lost	18.6 mil	5.1 mil

The European Tobacco Control Report, EUR/06/5062780, 2007
Smoking-Attributable Mortality, MMWR, 2008,57(45);1226-1228
State-Specific Prevalence and Trends, MMWR,2009,58(9).

in tobacco education reported by medical and dental education include: the use of active learning methods and standardised patients^{14,15} the use of competencies¹⁶ and the involvement of expert faculty members as mentors¹⁷. Unfortunately, much of tobacco education continues to focus on a very brief intervention - Ask, Advise, and Refer. Though there is evidence that brief interventions are effective, better success was achieved when more time was spent assisting and following-up the patient¹⁸. As a possible outcome of limited tobacco training in school, medical and dental providers continue to offer inadequate tobacco interventions in actual practice¹⁹⁻²¹.

In order to increase intervention effectiveness, educators need to expand both the didactic knowledge and clinical competencies to actually help their unmotivated patients consider a quit attempt, assist them as they quit then provide follow-up and relapse prevention support^{11,22}. There is also evidence that tobacco education should be provided early and diffused throughout the professional sequence²³.

In 2006, an internationally acclaimed group of oral health professionals published the position paper Tobacco Use Prevention and Cessation in Dental and Dental Hygiene Education²². This foundational article from the First European Workshop on Tobacco use Prevention and Cessation for Oral Health Professionals in 2005 provided a detailed description and resources on the current state of tobacco education in the oral health field.

The focus of this paper is to present the consensus from the Second European Workshop 2008 Education Working Group which specifically focused on taking the existing paradigms of the U.S. Public Health Service 5As and 5Rs¹⁸; FDI World Dental Federation/WHO 4As²⁴, New Zealand's ABC (ask, brief advise and cessation support)²⁵ and the WHO Framework Convention on Tobacco Control (FCTC) Report on Tobacco Dependence and Cessation²⁶:

FDI Tobacco or Health Guide

www.fdiworldental.org/public_health/assets/Tobacco/Tobacco_or_Oral_Health.pdf

New Zealand Smoking Cessation Guidelines

<http://www.moh.govt.nz>

U.S. Public Health Service Clinical Practice Guideline 2008 Up-Date

www.ahrq.gov/path/tobacco.htm

Current recommendations acknowledge the need to ask and advise but then go on to stress the importance and value of using brief motivational interventions to more effectively reach patients who are ambivalent or not interested in making a quit attempt. Oral health education has the mandate to not only train future clinicians in brief tobacco cessation but provide more effective, evidence-based behavioural interventions. Our proposed paradigm shift would move oral health-care educators from training students in the traditional method of educating the patient towards techniques and strategies which would involve and motivate the patient. This could be accomplished by utilising a modified model of motivational interviewing called health behaviour change²⁷ which could be employed in all forms of patient education including promotion of systemic and oral health through plaque control, dietary intervention or tobacco use prevention and cessation (TUPAC).

Levels of care

In order to facilitate the adoption of tobacco use prevention and cessation (TUPAC) strategies by practitioners, numerous government agencies and professional associations have promoted different models of care involving various steps and strategies. Many of them involve the use of the 3As, 4As or 5As which include varying levels of intensity and composition. The range of intervention includes as little as 30 seconds as with the ADHA's Ask, Advise, Refer to the U.S Public Health Service Guideline's intensive intervention of four or more interventions for more than 10 minutes each¹⁸. Although dental practitioners have a unique opportunity to see basically healthy people throughout their lives on a regular basis, they also have limited time in their schedule to include lengthy interventions. On the other

hand, just asking if a person uses tobacco then advising them to quit at every dental visit would probably not be well received by the patient.

What, then, is a reasonable and appropriate level of a TUPAC for the unique setting of the dental practice? This, in part, may be addressed by the U.S. Department of Health and Human Services 2008 Public Health Service Treating Tobacco Use and Dependence: 2008 Update. A meta-analysis of 43 studies was compared for session length and intervention intensity. With each increasing level of intensity, the estimated abstinence rate increased (minimal: 13.4%; low: 16.0%; higher: 22.1%). These three levels of interventions may be put in terms of basic (brief), intermediate or advanced (intensive) care rather than just brief and advanced interventions. Breaking the TUPAC down to three levels of care may provide dental educators and practitioners a more appropriate paradigm to offer TUPAC during the amount of time and repeated visits that are a customary part of dental treatment. In addition, medical providers have indicated that referring patients for tobacco cessation to an allied health member may be a more appropriate model to follow when limited time is an issue²¹.

Levels of care model

This multilevel model for tobacco use prevention and cessation gives dental clinicians the freedom to offer a varied approach, depending on what they sense the patient needs during that specific appointment (*Figure 1*):

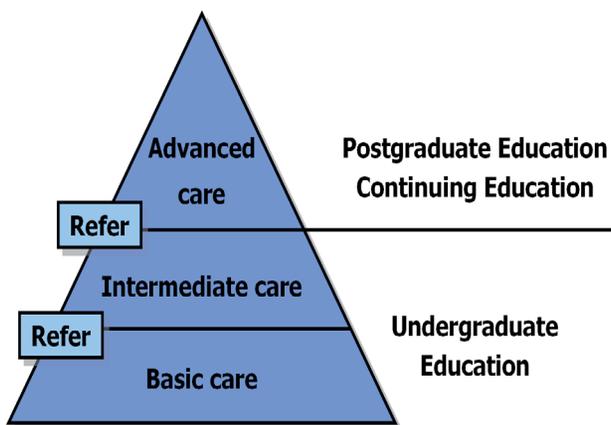


Figure 1. Levels of Intervention for a Tobacco Cessation Intervention. Adapted from Davis JM, Tobacco Education, In: Harris NR, editor. Primary Preventive Dentistry²⁸.

- Basic care: brief interventions of 30 sec to 1+ min in order to identify tobacco users, assess readiness to quit, request permission to re-address at a subsequent visit, and if preferred, refer for further TUPAC counselling.
- Intermediate care: interventions of 5 min to 10+ min consisting of brief motivational interviewing sessions to build on readiness to quit, enlist resources to support change, and to include cessation medications.
- Advanced care: multiple intensive interventions of 20 min+ for complex care patients to develop a detailed quit plan including the use of suitable pharmacotherapy, exploration of past failures, and adjust recommendations as needed²⁸.

The basic or brief intervention may be appropriate for a dental emergency or in a public health clinic where the patient may or may not be seen as a regular patient on an on-going visit. A basic intervention could also be provided at each re-care appointment if a good rapport has been established. In this case, the dentist, dental therapist/hygienist, dental nurse/assistant needs to be prepared to offer a more intensive intervention if the patient indicates they would like more information or are ready to quit. At this time, a clinician could refer-out to a tobacco quitline, community service or offer the next level of cessation intervention.

The intermediate intervention is a TUPAC that seems to fit well for the dental hygiene appointment where the hygienist can offer a more extensive intervention during an oral hygiene appointment. Depending on what the patient says during the appointment, the clinician would be able to review the specific effects tobacco has had on their tissues as well as tailor strategies, medication options, and offer support for past quit efforts. The TUPAC is built more on what the patient needs rather than a formula or utilising all or a specific order of 'letters'. This intermediate intervention provides options, rather than prescription, in order to personalise care and removes the concept of brief or intensive as the only two models that may not work for dentistry.

The intensive intervention level could be offered in the dental office during an appointment specifically designated for TUPAC but would more likely need to be offered by a trained tobacco treatment specialist in a public health or some other counselling setting. Patients who may need an intensive intervention are those who are highly addicted to nicotine, have experienced numerous failed quit attempts or are experiencing mental illness and are beyond the scope of care for a dental professional. This level of TUPAC poses several barriers for dental providers including:

- Specialised TUPAC training for dental providers
- Heightened awareness of the need for this service in dental care
- The need to obtain reimbursement for a TUPAC-specific appointment.

If these barriers are adequately addressed, then the dental office may become a very effective option to external care where patients may drop out of care during a referral process.

Education and training needed for TUPAC

Both the basic and intermediate interventions could easily be incorporated into the curricula for dentists, dental therapists/hygienists and dental nurses/assistants. Courses such as oral hygiene education, oral medicine or other content that presents information on health promotion or disease prevention would interface well with TUPAC training. Continuing education would be another avenue to further basic or intermediate skills for providers who did not receive this type of training while in school.

Those dental or dental hygiene students wanting to provide advanced or intensive interventions could pursue this training through electives offered in college, graduate courses or tobacco treatment specialist continuing education courses. This level of training can better prepare dental providers with counselling skills such as motivational interviewing, problem solving strategies and complex mediation issues. Rigotti *et al.*²⁹ identified 61 current tobacco training programmes, 37 different, in 48 countries surveyed. Survey respondents estimated approximately 14,000 individuals received tobacco cessation training in 2007. In the USA, a list of tobacco treatment programs can be found on the Association for the Treatment of Tobacco Use and Dependence (ATTUD) web site <http://www.attud.org/findprog.php>.

Building rapport

Implementing Health Behaviour Change in a dental setting requires consideration of how to build rapport by enhancing basic communication skills and enabling the collaborative and empathic spirit of Motivational Interviewing. Even basic matters such as how the patient and practitioner are positioned during the conversation can contribute to the patient feeling like they are truly being invited to engage in a conversation as a partner.

Basic communication skills

There are four primary activities for the beginning stages of a brief Motivational Interviewing session. These can be summarised with the acronym OARS, for Open-ended questions, Affirm the patient, Reflect, and Summarise.

Asking open-ended questions encourage exchange, collaboration, and effort on the part of the patient. Affirming the patient strengths and appreciation of his or her honesty will decrease defensiveness and increase both openness and the likelihood of change. Reflection is the primary way to demonstrate empathy, e.g.

the ability to understand another person's perspective. Summarising the patient demonstrates interest, organises the interview, and gets things clarified if necessary.

Key principles of health behaviour change interventions

Four key principles have been identified that capture the underlying philosophy of any health behaviour change method. First, a practitioner should express empathy for the patient's challenge to change behaviour. Second, discrepancy should be developed between the patient's current behaviour and how he or she would ideally like to behave. Third, the clinician should try to avoid arguing and therefore be able to roll with resistance. The fourth key principle is to support self-efficacy or the patient's confidence in their ability to make a change.

Attitudes of students and professionals

In recent years there has been a steady increase in dentists considering tobacco use cessation counselling as part of their duty towards their patients³⁰. Some dentists still feel their primary duty is that of educating the patients to the detrimental effects of tobacco, and many still focus their efforts exclusively on heavy smokers³¹⁻³³. Many dentists still feel they are not properly trained to actively counsel their patients on tobacco use prevention and cessation, and therefore prefer to simply advise their patients on the effects of tobacco use on oral health³³. Recent studies, however, have shown a steady increase in dentists who consider tobacco use cessation counselling as their duty and are subsequently becoming more actively involved in tobacco use cessation^{32,34}.

A similar tendency can also be observed on the part of hygienists; in a study in Scandinavian countries, 73% of dental hygienists believe tobacco use prevention and cessation is part of their professional duty, but only 60% of them give patients advice on tobacco use cessation^{35,36}. In the USA, a similar study found approximately 90% of dental hygienists feeling that tobacco use cessation is part of their professional duty³⁷. Overall, the dental team comprising the dentist, dental nurse and dental hygienist have shown an evolution in attitudes towards tobacco use cessation. While a decade ago few dentists inquired about the tobacco habits of their patients³⁸⁻⁴⁰, with more evidence surfacing on the detrimental effects of tobacco on oral health, more and more dental health care providers found themselves involved in the education of their patients⁴¹ and recently, a conscious awakening has been taking place where the team see tobacco use cessation as part of their professional duty⁴². Although the general perception of tobacco use cessation has become stronger among health care providers, surveys carried out among undergraduate dental students and dental hygienists has shown that, though they feel it a duty to involve themselves in tobacco use prevention and cessation, they still

feel they have not received the proper training⁴³⁻⁴⁶. As a result, some students limit themselves to giving their patients advice, but do not get involved in active counselling in helping their patients to quit.

At another level, similar changes in the attitudes of patients towards tobacco use counselling by their dentists can be traced along the years. Early surveys showed that most patients felt more comfortable receiving advice on tobacco use by their physicians rather than their dentists. This was also due to the fact that physicians were more likely than dentists to offer advice on tobacco use cessation⁴⁷. Results from several surveys suggest that patients, in a way, reflect the dentist's confidence and are receptive to receive advice from their dentist for as long as their dentist feels capable of counselling⁴⁸. Until recently, many studies suggest that if patients were to seek help to quit tobacco use, they would feel more comfortable going to their physician or even a pharmacist rather than a dentist⁴⁹.

There is enough evidence to suggest that, seeing the great impact tobacco has on oral health, most dental health care providers feel it their duty to counsel their patients on tobacco use prevention and cessation. Whatever reluctance is still felt by the dental team is a reflection of the yet inadequate training they receive while in dental schools. The surveys have shown that with a more adept curriculum change that teaches all aspects of TUPAC, more dental health care providers would play an active role in the fight against tobacco.

TUPAC content in dental curriculum

The adoption, diffusion and integration of any 'new' curriculum content area vary widely from school to school. The inclusion of TUPAC should include all foundational knowledge necessary to prepare students to provide both brief and intermediate interventions. A detailed list of content area can be found in *Figure 2*.

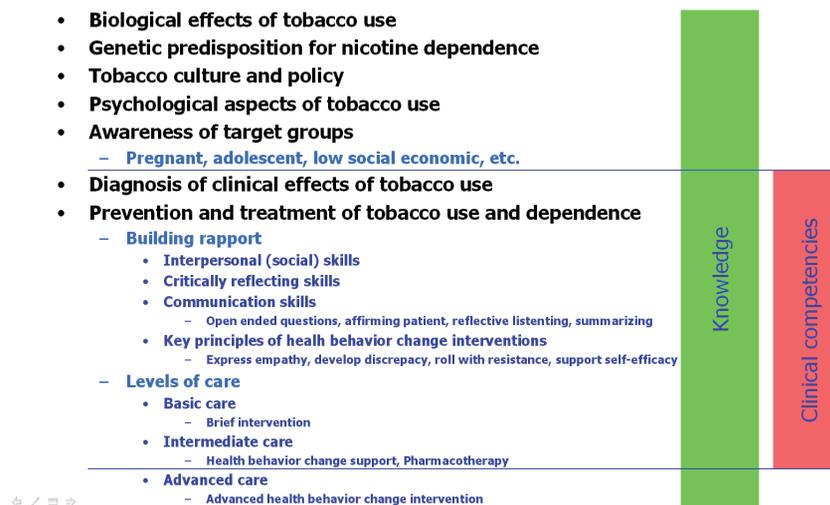


Figure 2. Content Areas for Tobacco Education in Dental Education

Since affects of tobacco on oral health are so varied and pervasive, integrating specific sections or modules of information could be easily incorporated into existing courses such as:

- Periodontics and oral pathology would be strong choices for inclusion of the biologic effects of both smoked and smokeless tobacco use
- Pharmacology would be an ideal course to incorporate the concept of nicotine addiction and recommendation for tobacco cessation medications
- First year orientation or a communications course would be an ideal location for the introduction of the health behaviour change model
- Clinical courses offer an ongoing opportunity to practice TUPAC with the end product of clinical competency.

When planning any curricular change, it is important to consider that content should be in alignment with both assigned levels of competence and methods of teaching and assessment⁵⁰.

TUPAC education should start early in the curriculum (pre-clinical) and continue throughout the entire programme in order to establish this skill is as important and integral to dental health as plaque control, oral cancer screening and monitoring blood pressure. If TUPAC is taught in the student's last semester of training, they may not have adequate opportunity to become both competent and proficient in this important skill and may view tobacco cessation as an 'add-on' or not as important as other skills taught throughout their dental curriculum.

TUPAC teaching methods

Instructional methods vary from school to school but should allow students to not only demonstrate a high level of knowledge through testing but also be given an opportunity to role-play newly learned information

and counselling techniques. Knowledge of tobacco-use and treatment can be gained through traditional lecture, problem-based learning, case studies, treatment planning or e-learning, depending on the existing curriculum and time available.

Educators often mention the issue of limited opportunities for the addition of tobacco education in an already full curriculum. At first glance, this argument seems to be valid. Upon closer examination, however, there is no other aspect of oral health promotion and disease prevention - other than oral biofilm - that so impacts the development of periodontitis, poor healing after surgery and failure of implants than smoking.

As educators we need to be forward thinking and make TUPAC not a topic added in somewhere or offered the last semester of training but introduce it in the same semester that blood pressure and basic health assessment is taught. This way, students will see TUPAC as a normal aspect of patient care and not something to do as an afterthought.

The traditional place to learn the biologic effects of tobacco-use, cessation medications and the behavioural techniques for an effective tobacco intervention is the classroom. The classroom or lab setting can also provide students with the opportunity to peer role-play or utilise a standardised patient. Case studies with basic dialogues are another excellent way to facilitate students to begin the process of assimilating knowledge with basic health behaviour change skills. The opportunities to practice these skills are often cited by students as an important factor in their sense of self-efficacy in providing TUPAC¹⁵. Not only do students have the opportunity to synthesise possible treatment plan options for the smoker, they also have the chance to hear feedback from their fellow students who are participants in the role-play. This peer-to-peer interaction provides a fairly non-threatening setting in which to practice a newly learned counselling skill. The role-play or standardised patient TUPACs could be digitally recorded and played back as a feed-back option for the student or class.

The transfer from classroom to the clinic is the place where many dental educational programmes fall short. Often, the student's clinical work focuses on technical skills being demonstrated and evaluated for competency. Due to time or lack of training on the part of clinical faculty, tobacco cessation often stops at asking if the patient smokes, then advising them to quit, then giving them some information or the quitline number. This scenario does not allow the student to practice and obtain competency in evidence-based TUPAC. Again, as in the case of oral hygiene instructions or nutritional counselling, students must be given opportunity throughout their rotations and clinical experiences to actively apply the knowledge learned in all aspects of patient care.

When deciding on the level of TUPAC competency that graduates should be able to demonstrate, both the basic / brief and intermediate competency level previ-

ously presented are obtainable and realistic integration levels for many dental or dental hygiene schools. The Advanced Level of TUPAC involves extensive training in motivational interviewing skills and, for most programmes, would not be practical to include in the regular curriculum. This advanced training could be obtained through post-graduate course work or continuing education.

Initially, students should be able to observe a faculty member providing TUPAC with a clinical patient. The student should then provide a tobacco intervention and be evaluated, first informally then formally, by a clinical faculty member proficient in TUPAC. Through multiple opportunities to provide TUPAC, students' sense of comfort and ability could be raised to a level that would be easily applied to patient care after graduation.

Assessment of TUPAC education

Learning in academic settings is strongly related to the way the students are tested or examined⁵¹. Apart from its discipline-related learning objectives, a modern health-care curriculum needs to focus student learning to the development of cognitive and reflective skills such as critical thinking and self-assessment ability, as well as promote attitudes such as life-long learning (*Figure 3*). In this respect, competence-based education and assessment holds a strategic role⁵².

During the First European Workshop on Tobacco use Prevention and Cessation for Oral Health Professionals in 2005, a working group position paper was produced with focus on assessment of knowledge and skills in the areas of counselling, communication and behaviour change⁵³. The proposed models placed emphasis on prospective, comprehensive, multidisciplinary and well integrated in the curriculum assessment. The paper discussed three major applications of assessment: knowledge and skills of the students, evaluation of the curriculum by students and educators and the assessment of the implementation process.

During the last decade, several new curricula have been implemented in dental schools in Europe and many other parts of the world, which place increasing emphasis on competences rather than the earlier discipline-based education. Chambers⁵⁴ defined competencies as "skills essential to beginning the practice of dentistry and allied dental practice". Competencies combine appropriate supporting knowledge and professional attitudes, and are performed reliably in natural settings without assistance. This definition has been accepted by the Association for Dental Education in Europe (ADEE)⁵⁵. Indeed, one could define competence as the integration of knowledge, skills and attitudes⁵⁶. The previous assessment paper⁵³ utilised the Miller model⁵⁷, to identify different levels and objectives of assessment and proposed appropriate approaches for each level and objectives. The present document aims

Teaching Methods

- **Knowledge:**
 - Lecture, PBL, e-learning
- **Clinical competence:**
 - Pre-clinical and clinical instruction, peer mentoring
 - Patient care
 - Mentoring
- **Diagnostics:**
 - Case presentations, PBL
- **TUPAC:**
 - **Building rapport:**
 - Audiovisual demonstration (i.e. video of an interview)
 - Peer-to-peer role play with immediate feedback
 - **Levels of care:**
 - Basic level: peer-to-peer role play, patient care
 - Intermediate level: peer-to-peer role play, standardized patient role play, patient care
 - Advanced level (elective): CE, graduate training

Assessment Methods

- **Knowledge:**
 - Multiple choice, other forms of assessments (written or oral exams)
- **Clinical competence:**
 - Portfolio
 - OSCE
 - Performance assessment
 - Clinical competency exam
 - Standardized patient
 - Role play feedback
- **Diagnostics:**
 - Additional: case presentations and portfolio
- **TUPAC:**
 - **Building rapport:**
 - Additional: assessment of communication skills and student's empathy
 - **Levels of care:**
 - Assessment in a variety of formats on basic, intermediate, and advanced level to test the increasing complexity

Figure 3. TUPAC Teaching and Assessment methods

to supplement and expand the work conducted during the previous workshop by implementing the latest developments in the field of assessment, as well as place all recommendations under the light of recent trends towards competence-based curricula.

Validity- and reliability issues

To assure that competences are really acquired, the assessment methods should be valid, reliable, acceptable and feasible^{58,59}. Van der Vleuten⁶⁰ combined these criteria for determining the usefulness or utility of a particular assessment method into a model. The five criteria or issues he described can be captured in the formula as a conceptual model for the utility (U) of competence assessment: $U = R \times V \times E \times A \times C$. Where R=Reliability, V=Validity, E=Educational effect, A=Acceptability, and C=Costs.

New developments in assessing performance - OSCE

The Objective Structured Clinical Examination (OSCE) was discussed in the previous paper⁶¹ and proposed for testing competences including patient assessment, diagnosis and treatment planning, and communication skills all based on applied knowledge^{62,63}. The method was proposed with a view to increasing the reliability and objectivity of measurements of performance. In the past four years more evidence was made available on the use and role of OSCEs in dental education. Results of a related study on OSCEs⁶⁴ clearly demonstrated that assessment drives student learning. Another study in the same field concluded that OSCE is a reliable tool for assessing competences in a summative and formative way including communication skills^{65,66}.

Building rapport

Latest research also suggests that OSCE can be an appropriate method for assessing the ability of students to establish rapport during patient encounters⁶⁷. Rapport is a prerequisite for counselling and in that way behavioural change interventions. O'Sullivan *et al.*⁶⁷ showed that inter-personal skills were assessed through the effect of the communication between doctor and standardised patient on fostering trust, relieving anxiety and establishing a therapeutic relationship. The scores and feedback comments from standardised patients to learners regarding their empathic behaviours can identify learners with important deficiencies⁶⁸. Also Van Zanten *et al.*⁶⁹ have reported encouraging results of assessing empathy and rapport of students through standardised patient encounters.

The assessment of empathy a student needs to show has also been studied by Whinefield and Chur Hansen⁷⁰. They concluded that further research is required to

identify students who fail to acquire skill in expressing empathy after undergoing training. Empathy may be measured from three different perspectives:

- Self-rating (first person assessment) – the assessment of empathy using standardised questionnaires completed by those being assessed
- Patient-rating (second person assessment) – the use of questionnaires given to patients to assess the empathy they experience among their carers
- Observer rating (third person assessment) – the use of standardised assessments by an observer to rate empathy in interactions between health personnel and patients, including the use of 'standardised' or simulated patient encounters to control for observed differences secondary to differences between patients.

Hemmerdinger *et al.*⁷¹ after reviewing studies on empathy concluded that there are available measures which can investigate the role of empathy in medical training and clinical care with a sufficient evidential base. Although a body of evidence is available on assessment of empathy, assessment of establishing rapport in smoking cessation counselling is a new area that needs to be further researched and developed.

In counselling for smoking cessation the ability to establish rapport is essential. Some dental health workers may be more adept than others for this counselling skill. Referral to clinics that are specialised is of course a possibility.

Performance based or clinical assessment

Performance based assessment implies assessment carried out in clinical settings, during real patient encounters. This generally involves chair-side operative competences, but also includes other interactive competences such as consultation and behaviour change interventions. Performance based assessment provides increased realism and can have both summative and formative functions. Weaknesses of such assessment schemes can be lack of standardisation and consequently lower reproducibility or reliability. However, this type of assessment has high relevance and is often perceived as the last stage in the assessment process or what the previous consensus paper would place in the 'does' level of the Miller pyramid. Performance assessment has traditionally been part of healthcare education, yet only lately have several structured models been presented and evaluated.

Performance based assessment might include the presence of an assessor while the student communicates and carries out the intervention or it might be done at a later stage, as for example described by Zick *et al.*⁷². In this model, videos of students communicating with their patient were used for assessment and self assessment with the help of predefined criteria. Video observation and assessment was also used as a tool in assessment of communication skills in general medical practice⁷³.

Some of the evaluated models include mini-CEX described by Norcini *et al.*⁶⁹, as well as 360-degree tests and standardised patients.

Mini-CEX was shown to be an effective assessment instrument with senior medical students, with eight ratings having a reproducibility coefficient of 0.77⁷⁴. Similar studies in postgraduate medical education suggested that as few as four mini-CEX assessments will reliably identify those who are well above or below the expected level of competency⁷⁵. In contrast, borderline candidates may require between seven and eleven assessments to achieve the same reliability⁷⁶.

Reflective assessment approaches

Reflective assessment methodologies such as diaries, logs and portfolios have increasingly gained importance in higher education. Student portfolios are used as a means to document students' accomplishments, clinical experiences and self-growth. Portfolios help assess the achievement of desired learning outcomes such as critical thinking and self-assessment. Advances have also been made in standardising subjective judgements and developing more objective methods of assessment in order "to develop a set of performance standards, to generate assessment evidence from multiple sources, and to expand the search for knowledge to search for 'reflection in action' in the working environment"⁷⁷.

Implementation of tobacco use prevention and cessation in dental curriculum

Implementing change in the curriculum of a dental school needs to be done with care. Implementing change without a special strategy can end in failure. Its introduction must be carefully implemented in order to gain acceptance and to minimise the occurrence of defensive behaviour from (dental) teachers and students as Manogue *et al.*⁷⁸ reported when implementing a new OSCE in their curriculum.

Argyris⁷⁹ recommended developing an implementation strategy of advocacy and inquiry to encourage the acceptance of personal responsibility. Schoonheim *et al.*⁸⁰ tested this theory in the implementation of new assessment methods in dental education. Their conclusion was that information, participation and commitment were used as tools to avoid resistance against change and to gain effective implementation with co-operation of the staff and departments. Without training for the faculty they will not be able to commit to the program, therefore we suggest the following implementation plan:

- Seek funding for faculty training
- Stepwise implementation with first a small pilot group
- Achieve commitment from teaching faculty (staff)
- Offer and share developed tobacco curriculum resources

- Establish network with outside health care experts
- Promote our consensus with professional dental associations.

Allard⁸¹ studied for this goal the attitudes of European dentists on TUPAC. He concluded that European dentists need more training. These studies can help persuade dental schools to provide that training in their curriculum.

Continuing education (CE)

In addition to addressing the need and process for education of tobacco use prevention and cessation for students in dental and dental hygiene programmes, there is a need to ensure that currently practicing dental professionals are consistently offering some level of intervention for their patients who use tobacco products. It has been reported by Wickholm *et al.*⁸² that the dental office visit is an opportune time to offer a basic intervention for tobacco cessation to patients who use tobacco products. Furthermore, following completion of a systematic review assessing interventions for tobacco cessation in the dental setting, Carr and Ebbert⁸³ concluded that oral healthcare professionals can be effective in reducing patient's tobacco use by incorporating a behavioural intervention during the dental office visit. Dentists and dental hygienists agree that oral healthcare professionals should be involved in providing this basic service to their patients who use tobacco; however, studies report that many oral healthcare professionals are not providing this basic intervention^{31,82,84,85}.

A basic intervention involves ask, advise, refer (AAR). Predominantly, the reasons documented for why oral healthcare professionals are not providing a basic intervention are:

- Lack of time
- Not considered their role
- Lack of reimbursement for providing the service
- That they feel uncomfortable and unprepared talking with patients about their smoking^{82,86}.

The following section focuses on the barrier of oral healthcare professionals feeling unprepared to discuss tobacco use and cessation with their patients.

Dentists and dental hygienists participate in continuing education (CE) and in some countries participation is even mandated to maintain licensure for practice. Therefore, it is possible that CE could be a viable means to provide further education and training for oral healthcare professionals to obtain the necessary knowledge and skills to increase confidence when talking with patients about their tobacco use and offering a basic intervention. However, the question remains of what is the most effective way to provide this education and training that will result in actual adoption of new information⁸⁷. In addition, what will be needed to motivate oral healthcare professionals to seek TUPAC courses as

a part of their required continuing educational requirements. It is through self selection that an oral healthcare professional decides what CE courses to participate in for advancing their knowledge and skills. These unanswered questions further create a challenge to ensure that all oral healthcare professionals are knowledgeable for providing the minimum of a basic intervention for tobacco use prevention and cessation.

Thomson O'Brien *et al.*⁸⁷ conducted a systematic review assessing continuing education meetings and workshops and their effect on professional practice and health care outcomes. Although it was noted that conclusions were difficult to report due to differences in how the studies were conducted, what was measured in the studies, etc; they did conclude that interactive workshops were more likely to create changes in practice than didactic sessions alone. Similarly, Bloom⁸⁸ conducted a review to assess the effects of continuing medical education on improving physician clinical care and patient health. Following a review of numerous studies and systematic reviews, he reported that physician care was more likely to change when continuing education was delivered using interactive processes such as audit/feedback, academic detailing and reminders. Bloom elaborated to say that physician practice was less likely to change when presented with clinical practice guidelines, didactic presentations and printed materials alone. Another important assessment of the impact of continuing education for health professions was completed by Robertson *et al.*⁸⁹ who suggested that CE is effective for improving knowledge, skills, attitudes, behaviour and patient outcomes. However, the CE must be ongoing, interactive, contextually relevant and based on a needs assessment. In summary, it can be concluded that healthcare practice can be positively changed and impacted by CE but interaction appears as a common thread that supports effectiveness or application of the CE session.

If CE sessions with an interactive component are implemented for training oral healthcare professionals in TUC, consideration must be given to a few potentially limiting factors. Challenges associated with interactive workshops are resource intensiveness, high costs and potentially small participation numbers so only reaching a small audience per session. Gordon *et al.*⁹⁰ and Akers *et al.*⁹¹ studied a smokeless tobacco intervention model comparing personalised instruction (workshop) versus self-study methods. At three-month follow-up by self reported survey, workshop participants showed more behaviour change than the group who studied the content through self-study; however, at 12 months with follow-up by survey, the self study group reported similar behaviour change as the workshop group in their application to dental hygiene practice. Akers *et al.*⁹¹ also reported the increased cost of conducting workshops for this CE training. The authors suggested that given this comparable change between self-study and workshops, that self-study is a viable alternative for CE in

motivated healthcare professionals. In relation to cost and intense resources, Albert *et al.*⁹² studied the interactive CE process of academic detailing and found it to be effective for changing practice but noted the limiting factors of the cost, time, and labour needed to implement this style of continuing education session.

It has been suggested that a minimum of a 4-hour workshop is needed to train dentists and dental hygienists to provide a basic intervention and at least two days or more are needed for training to provide an intermediate or advanced intervention⁸². Given these recommendations and considering the data that supports interactive CE sessions as a very viable process for better ensuring the theory and skills are applied to healthcare professional practice, it makes sense to develop and implement more interactive CE sessions on tobacco use prevention and cessation for oral healthcare professionals. However, the challenges remain in regards to high cost for this style of education and apparent lack of motivation for the professionals to choose to participate.

Further action in tobacco control initiatives by oral healthcare professionals is sought by Ayo-Yusu⁹³ who encourages relevant stakeholders of the dental healthcare profession to take action to “assume stewardship by providing support for the training of dental professionals in tobacco counselling and advocate for the adequate reimbursement of practitioners providing such services”. Johnson⁹⁴ purported that there is an important role for the dental team in larger tobacco control initiatives such as the development of tobacco free communities. Many of the local, national and international organisations or professional associations of dentistry and dental hygiene support a role for oral healthcare professionals in the provision of tobacco use prevention and cessation. Many of these organisations of dental and dental hygiene professions have policy or position statements on their website and have been involved in distributing various resources about tobacco use prevention and cessation services to their members.

American Dental Association (ADA):

http://www.ada.org/public/topics/smoking_tobacco.asp#ar

American Dental Hygiene Association (ADHA):

http://www.adha.org/careerinfo/continuing_education.htm

http://www.adha.org/downloads/perio_smoking.pdf

Canadian Dental Association (CDA):

http://www.cda-adc.ca/_files/position_statements/tobacco_cessation.pdf

http://www.cda-adc.ca/_files/position_statements/tobacco_products.pdf

Canadian Dental Hygiene Association (CDHA):

http://www.cdha.ca/content/newsroom/pdf/1004_tobacco.pdf

Federation Dentaire Internationale (FDI):

http://www.fdiworldental.org/federation/assets/statements/ENGLISH/Tobacco/Code_of_practice.pdf
http://www.fdiworldental.org/public_health/5_0tobacco.html

International Association for Dental Research (IADR):

<http://www.iadr.com/i4a/pages/index.cfm?pageid=3566>

The website links listed for these organisations are a sample of what is being advocated and supplied and is not intended to be an exhaustive list. Each of these organisations are advocating for and emphasising the importance for oral healthcare professionals to be engaged in broader tobacco control work but also to be involved in tobacco cessation with individual patients. However, the fact remains that relatively few oral healthcare professionals are actively and consistently offering an intervention for tobacco use cessation and they remain uninvolved with larger tobacco control initiatives.

Essentially, a few factors must converge together to actualise the practice reality of having oral healthcare professionals consistently providing an intervention for their patients who use tobacco products. The dental and dental hygiene regulatory bodies and professional associations have a role in being advocates for this service to be included in routine dental and dental hygiene practice standards. Secondly, the oral healthcare professionals themselves must be motivated to obtain the necessary training in order to be confident and effective when providing an intervention and lastly, more training sessions must be offered to provide access to the learning required for offering tobacco use prevention and cessation services. In conclusion, if these factors in CE moved progressively forward simultaneously with the implementation of an expanded curriculum in the educational programmes for dentistry and dental hygiene students, we may attain the reality of having tobacco use prevention and cessation imbedded in routine dental care.

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