The Empire Challenge: Statewide Initiative Linking the Role of Dental Hygienists to Tobacco Dependence Treatment

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Abstract

Purpose: The primary goal of this 3 year grant–funded pilot project was to determine if a specialized training program could increase the number of dental hygienists in New York state who routinely address tobacco use with their patients.

Methods: A training program based on the 2000 Clinical Practice Guideline, Treating Tobacco Use and Dependence, was developed to educate licensed and registered dental hygienists in New York. Outcome data are from cross–sectional surveys conducted before and after the training and from the New York State Smokers' Quitline.

Results: The formal training program was associated with a significant increase in the percentage of a sample of hygienists routinely addressing tobacco use and dependence with their patients. An increased number of calls to the Quitline were generated.

Conclusion: A comprehensive training program based on accepted clinical guidelines, which included increased accessibility to free supplies, was associated with an increase in the proportion of dental hygienists who routinely address tobacco use and dependence with their patients.

Keywords: Tobacco, cessation, behavior change, hygienists, training, Quitline, oral health

This study supports the NDHRA priority area, **Health Promotion/Disease Prevention:** Validate and test assessment instruments/strategies/mechanisms that increase health promotion and disease prevention among diverse populations.

Introduction

Each year in New York state, over 25,000 people die from a tobacco–related illness, 1.1 million children are exposed to secondhand smoke in their homes and 27,700 children under the age of 18 become daily smokers.[1] The state's total medical expenditures resulting from smoking are $8.2 billion a year.[2] It is estimated that if every health care practitioner, including dental hygienists, would address tobacco use according to the Clinical Practice Guideline, "Treating Tobacco Use and Dependence Recommendations," cessation rates would double from 1 to 2 million nationally each year.[3]

The dangers of tobacco use and secondhand smoke exposure are well documented. Tobacco use can cause oral diseases such as oral cancers, leukoplakia, stomatitis nicotina (smoker's palate), impaired gingival bleeding, periodontal disease, receding gums, acute necrotizing ulcerative gingivitis, halitosis, dental staining and excess dental calculus.[4] Tobacco use has also been linked to a number of other dental health conditions including salivary changes, delayed wound healing, smoker's melanosis, oral candidiasis, canker sores and hairy tongue.[5] Oral health diseases and problems related to tobacco use may be arrested or reversed if a patient discontinues tobacco use. Dental practices have the potential to reduce tobacco use in their patients.[6,7]

This 3 year initiative investigated the promotion of tobacco cessation through preventative dentistry. According to the National Center for Health Statistics, more than half of all smokers see a dentist each year.[8] Dental patients are likely to be highly receptive to positive health messages during checkups, and each dental visit allows the provider the time needed to deliver health–related messages and make referrals.[6] Dentists and dental hygienists are in a unique position to provide tobacco cessation messages and interventions that many other health care providers cannot offer.

The primary goal of this project was to determine if a training program specifically designed for

a sample of dental hygienists from New York state would increase the percentage of tobacco use and cessation messages they deliver to their patients. A related goal was to increase the number of smokers referred to the New York State Smokers' Quitline from dental practices.

Review of the Literature

The link between tobacco use and oral cancer was first reported widely in the landmark 1964 Surgeon General's Report on smoking and health.[9] More recently, the Surgeon General reported that tobacco use is responsible for 75% of deaths resulting from oral and pharyngeal cancer, and it is related to many other detrimental oral health effects.[10,11] Other oral health conditions for which tobacco is a primary risk factor include leukoplakia, periodontitis and delayed wound healing.[6,12,13] As a result of the relationship between smoking and diseases of the oral cavity, a compelling case can be made for a concerted effort by dentistry to reduce tobacco use.

Albert et al stated that dental practice in the 21st century should move from a restorative orientation to a broader promotion of health, and this shift in practice must include the treatment of tobacco use and dependence.[14] Several studies have focused on the relationship between tobacco use and dependence interventions and the dental practice. Monson and Engwesick conducted a study to investigate the prevalence of tobacco use among their patients and their readiness to quit tobacco within a collegiate dental hygiene clinic setting.[15] They also measured faculty perceptions regarding tobacco use and dependence education. Results suggest that dental hygienists have an opportunity to intervene but lack the knowledge, training and experience to provide personalized tobacco cessation counseling.

Two studies looked at the impact of tobacco dependence training on the opinions and behaviors of dental hygiene students or registered hygienists. Studts et al examined the impact of an education program provided to registered hygienists.[16] At the conclusion of the training, and with data from a follow–up survey, significant improvements in hygienists' knowledge, attitudes and practices towards tobacco dependence treatment in the clinical setting were noted. Maillet et al tested the impact of a tobacco cessation curriculum on dental hygiene students' practices related to providing cessation treatment to their clients.[17] This included advice to quit, informing clients of health risks, self–examination techniques for oral cancer and arranging post–counseling follow–ups. A survey with a sample of clients found that the program had little effect on improving dental hygienists' practices.[17]

Through a series of surveys administered by Davis et al to clinic patients, it was determined that there is a strong need for oral health care providers to effectively address tobacco use and dependence with their patients.[18] Survey data revealed that most patients who smoke want to quit, yet the majority of respondents reportedly did not want assistance with quitting. Dental hygiene faculty also reported strong positive attitudes associated with tobacco control education, however, at the time the study was conducted, dental hygiene faculty stated that it is generally not included in the hygienist's education. Dental hygiene faculty are unlikely to feel prepared to offer didactic training and evaluation when they have not received adequate training. The authors found that the barriers to addressing tobacco use and dependence can be easily overcome by promoting competency–based education in tobacco control.[18] This education will then provide dental hygienists with the skills to approach patients about their tobacco use and intentions to quit.

Albert et al found that dentists, like dental hygienists, have similar attitudes and practice behaviors associated with the integration of tobacco cessation intervention into dentistry practice.[14] The investigators surveyed dentists in a large, managed–care dental plan and addressed perceptions about the barriers to adopting cessation counseling in their practices. They found that many dentists did not have prior training in tobacco control, did not ask their patients about tobacco use and did not recommend nicotine replacement therapy. Dentists who were confident in their tobacco cessation knowledge were more likely to advise patients to quit. Nearly all dentists (95.6%) were willing, or very willing, to receive the training on best practices in tobacco control.

Monson and Engeswick examined the prevalence of hygienists who provide tobacco cessation counseling to their patients after they received tobacco control training provided during post–secondary dental hygiene education.[15] Dental hygiene students received 2 hours of didactic instruction on the best practices for tobacco control, specific counseling interventions from the Clinical Practice Guideline and assessment of patient's readiness to quit.[3] Each student also completed an intensive intervention followed by a self–evaluation. After the self–evaluation, students were required to implement brief interventions for all clinic patients who reported current tobacco use. During their final semester, students were given resource material for

implementing a tobacco use and dependence intervention in private dental practices.

The researchers mailed a survey to former students who were trained in tobacco cessation counseling techniques and were now working in private practice as dental hygienists. Between 1 and 3 years after receiving training, fewer than 6% of former students were providing tobacco cessation counseling to a high percentage (defined as 81 to 100%) of their patients.[15]

Harris et al conducted a survey of graduating dental hygiene students in North Carolina.[19] They reported that, while the students said they were comfortable providing counseling to their patients who use tobacco, 25% were unsure of how to work with smokers who were unwilling to quit tobacco.

The American Dental Education Association, an organization that establishes basic core competencies for dental and dental hygiene education, does not specifically include tobacco cessation education as a competency for these providers. However, this organization recognizes that dental hygienists need to emphasize both prevention of disease and effective health care delivery.[20] Based on the studies cited, it appears that a comprehensive training program that features a tobacco dependence curriculum comprised of training in evidence–based procedures and providing for sufficient practice is needed to enhance adoption of these procedures and to build confidence in service delivery. In addition, further study is needed to determine whether or not training dental hygiene students on tobacco dependence treatment has an impact on their behaviors and which training method is most effective.

Following is a description of a pilot program implemented in New York State that educates dental hygienists on how to help their clients that use tobacco to quit smoking. In addition, outcome data is presented regarding program effectiveness.

Empire Challenge Project

The Empire Challenge project was developed to replicate California's Gold Rush project. The project included an advisory board of staff from the American Dental Hygienists' Association, the Robert Wood Johnson Foundation's Smoking Cessation Leadership Center at the University of California at San Francisco and the Dental Hygienists' Association of the State of New York. A key component of the Empire Challenge Project was direct dental hygienist training, for which the New York State Department of Education and the Dental Hygienists' Association of the State of New York approved up to 6 continuing education credits. Trainings were offered at 15 locations throughout New York and were marketed across the state to ensure even geographic distribution. Thirty–three trainings were conducted and 1,953 dentists and dental hygienists attended the certificate trainings.

Each training session varied in length from 2 to 6 hours, depending on attendee and site organizer needs, and was conducted by the grant project coordinator. Various learning methods were used including lecture, slide presentations, role plays, educational DVDs, question and answer sessions and clinical case studies.

To assess the participants' level of understanding during the trainings, a quiz was given at midpoint. Correct answers were shared and time to discuss subject matter was allotted. All programs included an evaluation that was used to assess the instructor, materials, subject matter, facilities and space. All training materials, quizzes and evaluation forms are available upon request.

The training program was based on the Clinical Practice Guidelines and several existing educational programs, and it was designed to raise dental hygienists' awareness and knowledge of how to address tobacco use with their patients and the existence of resources to help patients quit.[3] Guideline concordant care incorporated into the training included education on the cessation process, counseling techniques and behavior modification. Key features from the Clinical Practice Guidelines incorporated into the Empire Challenge Project included the need for consistent documentation of tobacco use status and treatment, practical brief counseling strategies (Ask, Advise, Assist, Assess, Arrange), importance of social support and use of pharmacotherapy.[3] Findings from the Guideline were introduced during trainings to heighten the dental hygienists' awareness of tobacco dependence treatment and the dangers of secondhand smoke. It was recommended that the dental hygienist provide appropriate tobacco dependence interventions while the patient was receiving routine oral care.[21]

Other activities conducted as part of the Empire Challenge Project included broad distribution of educational materials at conference professional meetings and through special web access. A statewide incentive–based contest was created to increase the number of referrals to the New York State Smokers' Quitline, and to motivate hygienists to help patients quit. Mass mailings, e–mails, newsletters and listserv postings at various conferences were employed to educate dental providers about

the Empire Challenge trainings and the importance of treating tobacco dependence. The project provided a variety of free educational resources and other supplies to dental practices.

The Center for Smoking Cessation at Seton Health's Web site (www.QuitSolutions.org) served as the main Web site for the Empire Challenge and provided links to specific dental hygiene pages for education, ordering supplies, trainings, slides, latest research, related links, contact information and references. Trainings focused heavily on using the New York State Smokers' Quitline as a resource for helping patients quit. The Quitline provides free counseling and mails nicotine replacement therapy to callers who meet eligibility criteria. Patients can be referred to the Quitline by having the patient call directly or via a proactive faxed referral by the dental hygienist called "Fax–to–Quit." Quitline personnel contact the patient within a short time after the referral is made to determine the patient's status, motivation and need for Quitline services.

To sustain the project after the grant funds were gone, the project coordinator offered training and materials to all college–based dental hygiene programs to encourage incorporation of a tobacco dependence and treatment curriculum. All accredited dental hygiene programs were notified of local cessation centers for future tobacco cessation education and needs.

Program Assessment

Cross–sectional surveys were conducted before and after the Empire Challenge activities, with the post–survey completed 2 years after baseline. In each case, the survey was mailed to all dental hygienists registered with the New York State Department of Education. The baseline survey assessed prevalence of routine chair–side tobacco interventions. Dental hygienists were asked to complete and return surveys within 4 weeks via postal mail or fax. A nominal, non–monetary incentive was used to increase participation in the post–survey. The study design was cross–sectional, and it is unknown how many hygienists responded to both surveys. Data analyses were conducted using SAS 9.2.

Results

The initial survey was mailed to 9,416 licensed and registered dental hygienists across New York. The total number of surveys returned was 221 (2.3%). For the final evaluation, 9,410 surveys were mailed out and 388 (4.1%) were completed.

Results of the baseline survey showed that 64% of respondents reported they always or often asked their patients if they smoke. Over 70% reported they always or often advised their smoking patients to quit smoking. Only 40% reported they documented tobacco interventions and fewer than 20% reportedly referred smoking patients to the Smoker's Quitline. Barriers to use of these interventions cited by dental hygienists include lack of knowledge (31%), lack of time (10%) and privacy concerns (10%) (Figure 1).

Following the Empire Challenge Project, all these figures significantly improved (Figure 1), with 80% of responding hygienists reporting that they always or often asked patients if they smoke (chi–square=4.39, $p<0.05$). Nearly 90% of responding hygienists reported they always or often advised smoking patients to quit (chi–square=30.02, $p<0.0001$), whereas 70% documented their intervention (chi–square=51.78, $p<0.0001$). Although still the lowest scoring indicator, 41% of hygienists often or always referred smokers to the Smoker's Quitline (chi–square=29.18, $p<0.0001$), a significant improvement.

Data from the New York State Smokers' Quitline was analyzed in the year prior to the project (April 2005 to April 2006) to establish a baseline (Figure 2, 3). The results showed that dental referrals were 0.3% of the total Quitline call volume. Fax–to–Quit referrals by dental professionals were just 2.6% of the total prior to the start of this project. Following the Empire Challenge Project, these percentages increased. The averages for 2006 to 2008 showed an increase of 2% of direct referrals to the Quitline and 17% of Fax–to–Quit referrals. Figures 2 and 3 show an increase in calls in 2006 and 2007, with declines in 2007 and 2008. However, the dental provider graph shows a larger increase in calls and a sharper decline when the project was transitioning to evaluation and no longer providing active trainings (Figure 3). Overall, both figures show a significant increase in the number of referrals made to the New York State Smokers' Quitline during the April 2006 to March 2007 period when the project was actively conducting training.

Discussion

For the sample of dental hygienists who responded to the survey, significant improvements in each tobacco indicator were noted. Eighty percent and nearly 90% of responding hygienists reported that they often or always asked and advised their patients about tobacco use, respectively. Documentation of their intervention with patients is somewhat lower at 70% of the sample, but this increased from just 40% at baseline. Finally, the proportion

of hygienists referring their patients to the Quitline doubled during the course of this project, but still remains as the lowest of the 4 indicators.

The principal limitations of this study are the small sample/low survey response rate and the cross–sectional nature of the survey. Both potentially limit generalizability of the findings. Although the results are provocative, it is difficult to say that the results of this pilot project can be directly tied to the intervention. It is possible that hygienists who responded may be more attuned to the issues of tobacco dependence and therefore more responsive to the intervention. The incentive provided for the follow–up survey seemed to have improved response rates and should be used in future research for both pre– and post–survey data collection.

Despite these limitations, the results are strengthened by the objective findings related to increased use of Quitline services, which was an important component of the project. Use of these services peaked during the project and decreased after the project was completed. This suggests that sustainability is dependent on continuing dissemination of the project message.

The Empire Challenge Project might have been strengthened if thorough and intensive technical assistance were able to be conducted, to further increase the knowledge and understanding of dental hygienists on how to address patients who use tobacco. More intensive technical assistance and staff training within the dental practice, such as was done by Stevens et al for smokeless–tobacco cessation interventions in dental practices, may have led to higher Quitline referral rates.[22] Indeed, the decrease in Quitline calls/referrals during the 2007 to 2008 project year suggests a potential lack of sustainability for this relatively short–term project.

Figure 1: Results of survey of dental hygienists in New York before and after the Empire Challenge Project

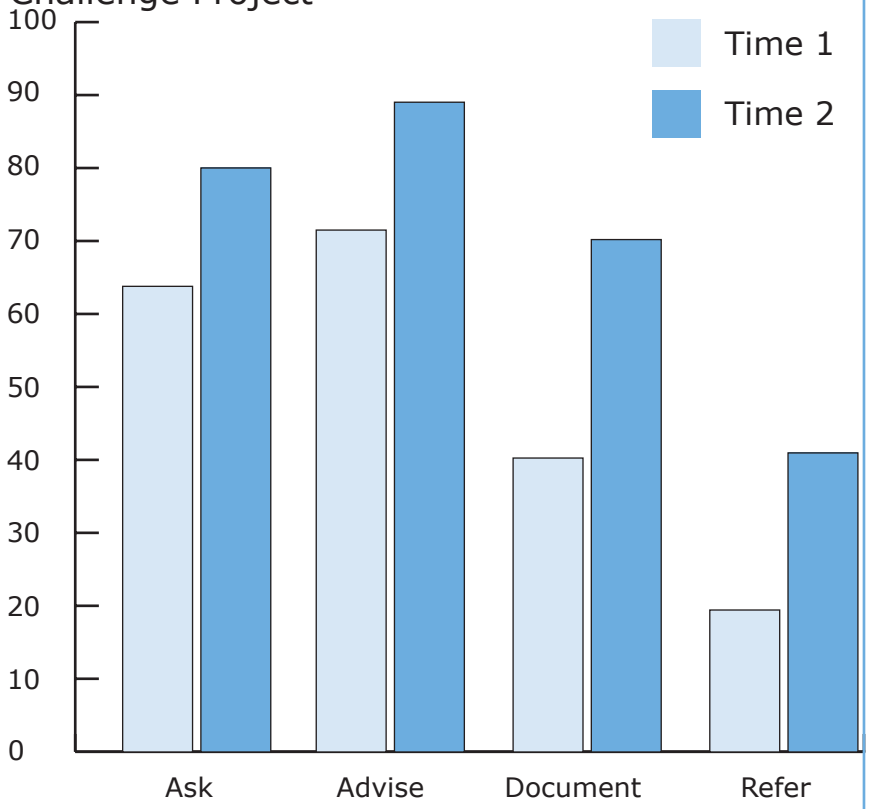
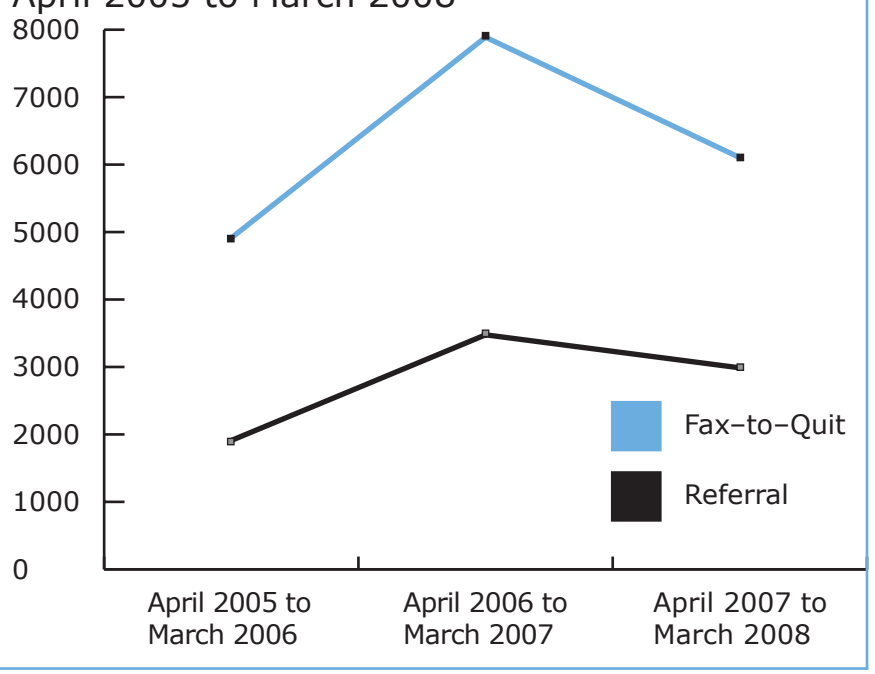


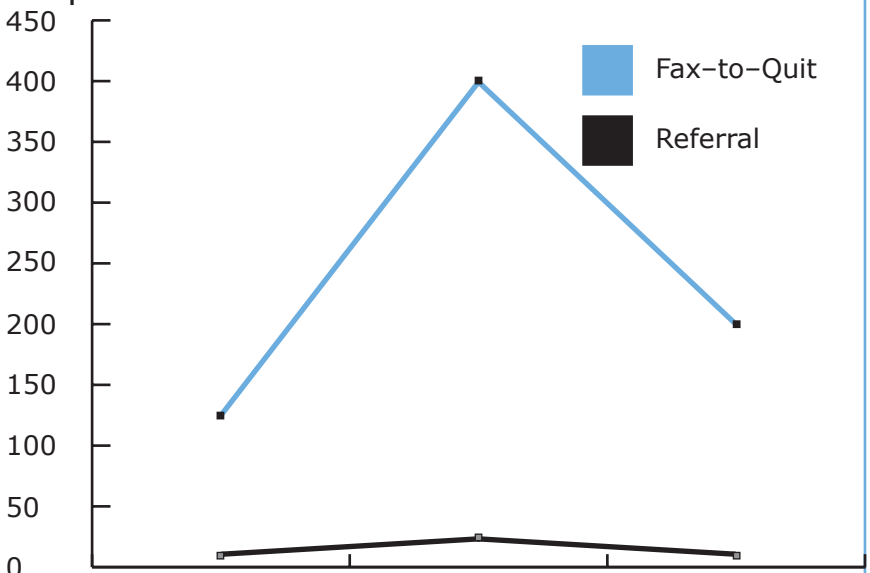
Figure 2: Quitline trends for telephone and Fax–to–Quit referrals from all health care providers – April 2005 to March 2008



Future studies should focus on improving response rates through the use of incentives and more intensive recruitment. Other methods of reaching

professionals might include online panel surveys that allow for targeted surveillance. It would be helpful to have more information about the respondents relative to their own attitudes, beliefs and behaviors regarding tobacco use and their perceived role in tobacco cessation. More demographic information would help understand the sample better, and online surveys often have access to this type of information about panel members.

Figure 3: Quitline trend for telephone and Fax–to–Quit referrals from dental professionals – April 2005 to March 2008



Stevens et al examined the effectiveness of training dental professionals to address patients who use spit tobacco.[22] They concluded that tobacco cessation interventions for spit tobacco users were effective in the dental office. They further stated that if it became a standard of care for all patients, there would be a substantial reduction in smokeless tobacco use. The current study, though different in approach and reach, demonstrated a similar outcome relative to addressing cigarette use by patients in dental practices. Overall, the authors believe targeting specific health care providers, such as dental hygienists, with a training program tailored expressly to them generates promising outcomes, as seen by increased referrals to the Quitline during the height of the project's implementation.

Although the authors believe that success similar to that found in this pilot project could be achieved elsewhere, additional research is needed to verify. Larger samples and different surveillance methods would contribute to improved understanding of the impact of dental hygienist training. Dental hygienist training guidelines are changing, and the authors encourage the incorporation of comprehensive tobacco dependence treatment curriculum in the training of all dental hygienists.

Conclusion

A comprehensive training program based on accepted clinical guidelines, which included increased accessibility to free supplies, was associated with an increase in the proportion of dental hygienists who routinely address tobacco use and dependence with their patients. Results of this pilot project show that dental hygienists can be effective tobacco use and dependence counselors. Quitline data showed that when a statewide comprehensive training program was active, the dental provider referrals produced a higher call volume than general health care providers. However, sustainability will require additional effort. This supports the need for a statewide training program to work specifically with dental practices. Chair–side tobacco intervention could become a sustainable practice with appropriate training and technical assistance.

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Acknowledgments

The authors thank the Dental Hygienists' Association of the State of New York, the dental hygienists who participated in the study and Marge Mineau, B.A., for providing administrative support for the duration of the project.

The Center for Smoking Cessation at Seton Health is funded by a grant from the New York State Department of Health Tobacco Control Program.

References

1. Campaign for Tobacco Free Kids. The Toll of Tobacco in New York [Internet]. Washington, DC (MD):[2009]. http://tobaccofreekids.org/reports/settlements/toll.php?StateID=NY

2. Centers for Disease Control and Prevention. Best Practices for Comprehensive Tobacco Control Programs—2007. Atlanta, GA. U.S. Department of Health and Human Services. 2007.

3. Fiore MC, Bailey WC, Cohen SJ, et al. Treating tobacco use and dependence: clinical practice guideline. 2000 edition. *U.S. Department of Health and Human Services, Public Health Services.* 2000.

4. Christen AG, Klein JA. Tobacco and your oral health (1st ed.). Illinois. Quintessence Publishing. 1997.

5. Bain CA, Moy PK. The association between the failure of dental implants and cigarette smoking. *Int J Oral Maxillofac Implants*. 1993;8(6):609–615.

6. Tomar SL. Dentistry's role in tobacco control. *J Am Dent Assoc*. 2001;132:30S–35S.

7. Carr AB, Ebbert JO. Interventions for tobacco cessation in the dental setting. *Cochrane Database Syst Rev*. 2006;25(1):CD005084.

8. National Center for Health Statistics. Health: United States, 2000 with adolescent chartbook. *U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics*. 2000. DHHS publication 00–1232.

9. U.S. Public Health Service. Smoking and Health. Report of the Advisory Committee to the Surgeon General of the Public Health Service. *U.S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control*. 1964. PHS Publication No. 1103.

10. U.S. Department of Health and Human Services. Reducing the Health Consequences of Smoking: 25 Years of Progress: A Report of the Surgeon General. *U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Chronic Disease Prevention and Health promotion, Office on Smoking and Health*. 1989. DHHS Publication No. (CDC) 89–8411.

11. Winn DM. Tobacco use and oral disease. *J Dent Educ*. 2001;65(4):306–312.

12. Palmer RM. Tobacco smoking and oral health. *Br Dent J*. 1988;164(8):258–260.

13. Preber H, Bergström J. Effect of smoking on periodontal healing following surgical therapy. *J Clin Periodontol*. 1990;17(5):324–328.

14. Albert D, Ward A, Ahluwalia K, Sadowsky D. Addressing tobacco in managed care: A survey of dentists' knowledge, attitudes, and behaviors. *Am J Public Health*. 2002;92(6):997–1001.

15. Monson AL, Engeswick, LM. Promotion of tobacco cessation through dental hygiene education: a pilot study. *J Dent Educ*. 2005;69(8):901–911.

16. Studts JL, Burris JL, Kearns DK, Worth CT, Sorrell, CL. "Providers practice prevention": Promoting dental hygienists' use of evidence–based treatment of tobacco use and dependence. *J Dent Educ*. 2009;73(9):1069–1082.

17. Maillet JP, Tax CL, Neish NR, Denny AL. Evaluation of outcomes for tobacco cessation counseling in the Dalhousie University dental hygiene curriculum. *J Dent Educ*. 2010;74(3):311–317.

18. Davis JM, Stockdale MS, Cropper M. The need for tobacco education: studies of collegiate dental hygiene patients and faculty. *J Dent Educ*. 2005;69(12):1340–1352.

19. Harris JL, Patton LL, Wilder RS, Peterson CA, Curran AE. North Carolina dental hygiene students' opinions about tobacco cessation education and practices in their programs. *J Dent Educ*. 2009;73(5):539–549.

20. American Dental Education Association. Competencies for Entry into the Profession of Dental Hygiene. *J Dent Educ*. 2004;68(7):745–749.

21. Gould KA, Eickhoff–Shemek JM, Stacy RD Mecklenburg RE. The Impact of National Cancer Institute training on clinical tobacco use cessation services by oral health teams. *J Am Dent Assoc*. 1998;129(10):1442-1449.

22. Stevens VJ, Severson H, Lichtenstein E., Little SJ, Leben J. Making the most of a teachable moment: a smokeless–tobacco cessation intervention in the dental office. *Am J Public Health*. 1995;85(2):231–235.