Evaluation of Outcomes for Tobacco Cessation Counseling in the Dalhousie University Dental Hygiene Curriculum

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Abstract: As part of their curriculum, senior dental hygiene students at Dalhousie University Faculty of Dentistry provide tobacco cessation counseling (TCC). This study was conducted to evaluate the effectiveness of the TCC didactic curriculum and its clinical extensions. Research methods included a comprehensive literature search, an assessment of available resources related to TCC, and a structured telephone interview. The interview, consisting of ten summative questions, was conducted to determine the current tobacco use status of clients who had been counseled by a dental hygiene student for tobacco cessation. A target population of 132 subjects was extracted from axiUm, Dalhousie University dental clinic's patient database. The population represented clients who had TCC from 2001 to 2008. The investigators wanted to know if the client was 1) advised to quit tobacco use; 2) informed of the health risks of using tobacco; 3) still using tobacco; 4) taught self-examination techniques for oral cancer; and 5) if any post-counseling follow-up was initiated. A convenience size of fifty-one subjects was obtained. Survey results, along with the assessment of resources, revealed that the current TCC program needed improvement. As a result of the research, changes were implemented aimed at improving the effectiveness of the TCC program, and recommendations were made for further changes to enhance the overall program effectiveness.

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Keywords: dental hygiene, tobacco cessation, counseling, program evaluation, outcomes, students, education

Submitted for publication 6/18/09; accepted 11/14/09

Tobacco-related illnesses place a tremendous burden on the health care system. In Canada, approximately 40,000 people die from tobacco-related illnesses each year.[1,2] The oral effects of tobacco use are visible earlier than the systemic effects, so the dental hygiene appointment offers a unique opportunity to intervene and encourage tobacco users to quit.[3-7] Evidence has shown that brief clinical interventions significantly increase the rate of quitting among tobacco users.[4,5,8-12]

As part of the educational program, senior dental hygiene students at Dalhousie University Faculty of Dentistry provide tobacco cessation counseling (TCC) to tobacco-using clients. The main objective of TCC is to have tobacco users quit. Permanently quitting tobacco use can take several attempts before success occurs.[1,3,8] TCC is multifactorial and must include a number of essential objectives to meet client needs. These include advising all tobacco users to quit; informing tobacco users of the many health risks associated with tobacco use; providing users with relevant literature; teaching users how to do self-examination for oral cancer; and providing follow-up care as required.

The purpose of this study was to determine if the tobacco cessation counseling delivered by students at Dalhousie University School of Dental Hygiene was effective in meeting the objectives of TCC.

Relevant Background Research

Specific but related research questions were developed to guide the literature search. The questions were as follows:

1. Is tobacco cessation counseling from dental hygiene professionals an effective method of helping tobacco users make a quit attempt?
2. How effective are tobacco cessation interventions done by dental hygiene students?

3. How is tobacco cessation being incorporated into the undergraduate dental hygiene curriculum?
4. What does a tobacco cessation curriculum for undergraduate dental hygiene programs include?

The literature search included the following databases: PubMed, CINAHL, ERIC Collection, and The Cochrane Library. The PICO (Problem, Intervention, Comparison, Outcome) question posed was this: For patients using tobacco, is tobacco cessation counseling from dental hygienists/dental hygiene students an effective intervention to help them quit tobacco use? The database searches included combinations of the following key words: tobacco cessation, smoking cessation, program evaluation, program effectiveness, dental hygiene schools, dental hygiene students, and dental hygienists. Search results were limited to the English language from 1998 to 2008. Abstracts were reviewed, and, if deemed relevant, full-text articles were retrieved. Bibliographies and reference lists of the full-text articles were then manually searched for any additional relevant material. This subsequent search resulted in obtaining some articles written prior to 1998. All search efforts resulted in forty-three relevant articles being reviewed. Various other sources, such as websites and reference texts, were consulted to enhance the gathered information.

The literature review reinforced that dental hygienists are in a prime position to influence a quit decision by tobacco users.[3,4] However, many hygienists do not make that intervention.[3,4,13-15] A number of reasons were identified, including not feeling confident in the role and not feeling educated enough to provide appropriate advice.[2,13-16] These barriers indicate an initial disconnect that has been extended into private practice.

Dental hygiene is a profession highly focused on ensuring oral health and, by extension, preventing poor overall health. The literature supports that hygienists, as health care professionals who know the harmful effects of tobacco use, have the ethical responsibility to advise all tobacco users to quit.[2,13-25] Individualizing the treatment based on the available health history and relevant oral signs will make the advice even more effective.[4] Detailed questionnaires determining the client's state of change help to form an effective customized intervention.[20] Providing brochures or pamphlets to summarize and remind clients of what has been said and recommended serves to complement the initial message.[4,11]

In addition to written information, clients must also be provided with strategies to help them quit. Davis et al. found that when intervention is combined with pharmacotherapies, approximately 30 percent of clients are able to quit successfully.[13] Providing consistent, repeated advice can be effective when trying to motivate clients to quit.[3,24] Moreover, clients who hear the same warnings and motivational messages from multiple sources such as hygienist, dentist, dental assistant, and receptionist are more likely to consider the messages.[3,24]

The literature shows that quit rates are not the only success of tobacco cessation programs. In Canada, there are 3,000 oral cancer diagnoses each year, and 75 percent of these cases can be attributed to tobacco use.[2] Early detection is critical to the successful treatment of these cancers.[2] Fortunately, when treated early, oral cancer can be treated successfully, so excellent oral hygiene care should include teaching clients how to perform a self-examination.[10]

Tobacco users are addicts.[24,25] Taking the time to counsel and connect with tobacco-using clients is necessary in helping them succeed in their decision to quit.[10] One of the ways to show support is through post-counseling follow-up.[15] It is evident from the literature that there are many aspects of the educational process of TCC that need to be monitored. The literature supports that someone needs to be responsible for 1) arranging education for all faculty members on TCC expectation and evaluation protocols; 2) gauging student progress; 3) monitoring and replenishing the resource inventory; and 4) overall program maintenance.[3,10,11]

The Canadian Dental Hygienists' Association position paper, "Tobacco Use Cessation Services and the Role of the Dental Hygienist,"[2] is a valuable resource as it gives clear direction and objectives for the role of dental hygienists in TCC, including those in educational institutions, and future research areas.

TCC Education for Dental Hygiene Students at Dalhousie

The current TCC curriculum for dental hygiene students at Dalhousie University includes a preclinical didactic course taught in the first year of the program. The course briefly teaches the history of tobacco, the biological effects of tobacco use, the physiology of tobacco addiction, and the quit supports available. The main focus of the course is to develop clinical counseling skills to help to-

bacco users quit. The counseling approach taught is a combination of the transtheoretical or stages of change model, in which students assess the client's stage of change (precontemplation, contemplation, preparation, action, or maintenance) and desire to quit tobacco, and the National Cancer Institute's 5 As model.[2,10-12,17] Students are taught to *ask* clients if they use tobacco, *advise* users to quit, *assess* users' level of addiction and readiness to quit, *assist* users to quit, and *arrange* follow-up to gauge progress and provide further assistance as needed. For clients who are not ready to make a quit attempt (as would be determined in the *assess* stage), students are taught to use the 5 Rs model to enhance the user's motivation to quit.[12,17] This model uses motivational interviewing (MI) and consists of *relevance*, in which clients are encouraged to indicate why quitting is personally relevant; *risks*, in which clients are asked to identify the negative consequences of tobacco use; *rewards*, in which clients identify possible rewards of stopping tobacco use; *roadblocks*, in which clients identify their personal barriers to quitting; and *repetition*, in which students repeat personalized motivational intervention messages during teachable moments. Students are taught to record counseling in the client's progress notes using an adapted format originally developed by Dr. Lawrence Weed. This was designed to provide case-specific comprehensive documentation. Weed's counseling documents the subjective content (S), objective observations (O), assessment of tobacco use behavior (A), and a plan of action, complete with a statement of prognosis (P) (SOAP).[26]

Second-year dental hygiene students at Dalhousie are required to complete two tobacco cessation counseling sessions on two clients based on the SOAP format as part of their required clinical competencies. Evaluation of this competency is carried out by instructors of Dalhousie University School of Dental Hygiene and is based on the student's SOAP[26] notes as recorded in the client's chart. The instructors do not actually take part in or observe the counseling session.

In 2008, the TCC program at Dalhousie University School of Dental Hygiene had the following objectives: 1) advise all tobacco users to quit; 2) inform tobacco users of the many health risks associated with tobacco use; 3) provide users with relevant literature; 4) teach users how to do a self-examination for oral cancer; and 5) provide follow-up care as required. The purpose of this study was to look at these objectives and determine if they were being met.

Methods

The project was submitted for human ethics review to the Health Sciences Research Ethics Board at Dalhousie University. Approval was granted on June 16, 2008.

Secondary information-gathering involved a non-arbitrary review of client SOAP notes. All clients of record of Dalhousie University Dental Clinic were examined. Only client records that indicated that the client had received TCC were pulled for the survey. The charts were then checked to verify that there was documentation of TCC. The chart was checked for documentation of process and postcounseling therapy follow-up. As well, an inventory of in-clinic TCC resources available for students to use as complements to counseling was performed.

The study's main data collection was through a telephone survey. The target population was all clients of record who had received tobacco cessation counseling at Dalhousie Dental Clinic. The clinic's patient database, axiUm, was used to filter all clients who had received TCC between September 2001 and April 2008, as the treatment code for TCC was first initiated in 2001. The TCC search yielded a sample population of 141 subjects. The 141 client charts were reviewed for the following: informed consent, a SOAP record, and demographic and contact information. The initial review revealed that one subject was deceased, and eight subjects could not be contacted due to poor financial relationships with the clinic. A survey population of 132 subjects remained. Of these subjects, seventy-four subjects were male, and fifty-eight were female. Subject ages ranged from eighteen to seventy-six with the median age being forty-five.

Subjects were contacted via telephone utilizing a single research assistant. The survey was conducted using a scripted telephone conversation. Subjects were assured that their participation was entirely voluntary and in no way would affect their treatment at the clinic and that all information would be kept confidential and they would not be able to be identified in the final research product. As well, subjects were given two opportunities to decline participation before the research assistant asked the questions. A convenience sample was obtained as each subject had an equal chance of being contacted. After six consecutive times through the list, contact attempts were stopped.

An expert panel of dental hygienists developed the survey consisting of summative close-ended ques-

tions reflecting outcomes. Nine of the ten questions required a simple "yes" or "no" response; the remaining question required a timeline statement. The expert panel supported question validity, which was also supported by the literature review, particularly the *Smoking Cessation Program Evaluation Handbook*.[18] This document was developed for the Center for Health Promotion and Education, U.S. Centers for Disease Control and Prevention. The survey questions were as follows:

1. Were you advised to quit tobacco usage?
2. Were you advised of the health risks associated with tobacco use?
3. Were information pamphlets provided to you?
4. Were you provided with strategies to assist in the quitting process?
5. After the counseling, did you permanently quit using tobacco?
6. (If no) Did you quit for any period of time?
7. (If yes) How long was the time before starting to use tobacco again?
8. Were you taught self-examination techniques?
9. (If yes) Do you do the self-examination?
10. Was there any follow-up, by either a phone call or appointment, following your tobacco cessation counseling?

Results

Of the 132 subject population, seventy-one were successfully contacted, and sixty-one could not be reached. This resulted in a response rate of 72 percent, with fourteen people declining to participate and six people stating they did not recall receiving any counseling. Thus, using the true sample size (n=51), this survey had a margin of error of ±10.79 percentage points at a 95 percent level of confidence.

Survey outcomes are shown in Table 1. On Question 1, "Were you advised to quit tobacco usage?" forty-six respondents (90 percent) said yes, and five respondents (10 percent) said no. On Question 2, "Were you advised of the health risks associated with tobacco use?" fifty respondents (98 percent) said yes, and one respondent (2 percent) said no. On Question 3, "Were information pamphlets provided to you?" twenty-six respondents (51 percent) said yes, and twenty-five respondents (49 percent) said no. On Question 4, "Were you provided with strategies to assist in the quitting process?" twenty-seven respondents (53 percent) said yes, and twenty-four respondents (47 percent) said no. On Question 5, "After the counseling, did you permanently quit using tobacco?" one respondent (2 percent) said yes, and fifty respondents (98 percent) said no. On Question 6, "Did you quit for any period of time?" asked of the fifty respondents who had not permanently quit, eleven respondents (22 percent) said yes, and thirty-nine respondents (78 percent) said no. On Question 7, "If you did not permanently quit, how long was the time before starting to use tobacco again?" asked of the respondents who indicated they had temporarily quit, the median quit time was one month (four weeks). The average quit time was 3.5 months (fourteen weeks). The range of quit time was one week to thirteen months. On Question 8, "Were you taught self-examination techniques?" seventeen respondents (33 percent) said yes, and thirty-four respondents (67 percent) said no. On Question 9, "Do you do the self-examination?" asked of the seventeen respondents who indicated

Table 1. Responses to survey questions, by percentage of responses to each question

Question	Percent of subjects who replied yes	Percent of subjects who replied no
1. Were you advised to quit tobacco usage?	90%	10%
2. Were you advised of the health risks associated with tobacco use?	98%	2%
3. Were information pamphlets provided to you?	51%	49%
4. Were you provided with strategies to assist in the quitting process?	53%	47%
5. After counseling, did you permanently quit using tobacco?	2%	98%
6. (If not) Did you quit for any period of time?	22%	78%
8. Were you taught self-examination techniques?	33%	67%
9. (If yes) Do you do the self-examination?	65%	35%
10. Was there any follow-up, by either a phone call or appointment, following your TCC?	8%	92%

they had been taught self-examination techniques, eleven respondents (65 percent) said yes, and six respondents (35 percent) said no. On Question 10, "Was there any follow-up, by either a phone call or appointment, following your tobacco cessation counseling?" four respondents (8 percent) said yes, and forty-seven respondents (92 percent) said no.

Discussion

Dental hygienists have an ethical responsibility to advise all treated tobacco users to quit. Survey outcomes indicated that dental hygiene students at Dalhousie University are advising their clients to quit (90 percent) tobacco use. It was interesting to find that a higher percentage (98 percent) of respondents were informed of the health risks of tobacco use than were advised to quit. We questioned if the discrepancy can be attributed to the client's stage of change at the time of counseling. For example, if clients say to students they have no intention of quitting, then students may not send a clear quit message.

Reviewing the SOAP notes revealed a general inconsistency in the quality of information provided and the counseling approach taken. From the researcher's standpoint, the SOAP notes provided generic feedback rather than individualized counseling commentary. This indicated that while the student knew what to look for and discuss, he or she might have been hesitant to personalize the counseling sessions. Personalization is a key factor in a successful intervention.[3,13] Another noteworthy finding was that students tended to follow the 5 As approach, regardless of the client's stage of change. More specifically, if clients indicated they were not interested in making a quit attempt, students continued counseling as if they were. Instead, students should have used the 5 Rs model to motivate the clients to want to quit. It appeared as though students were motivated to complete the TCC competency for clinical credits rather than provide client-centered motivational counseling.

All clients who receive intervention should be provided with TCC information material, whether they intend to quit or not.[3] The inventory of TCC resources at Dalhousie revealed large quantities and wide ranges of outdated materials, and could explain the high percentage (49 percent) of clients who did not receive information pamphlets or brochures. The literature shows that lack of materials such as pamphlets and brochures can be a barrier to TCC.[3] There was a vast array of literature stored in a cabinet, overwhelming to sift through, and most of it had not been updated for at least five years. There was no information on quitting tobacco available in the clinic waiting room. The waiting room is the strategic area to offer initial introduction to TCC.[3,24,25] By displaying self-help tobacco cessation pamphlets in the waiting room, clients have access to resources they may not have sought out themselves. As well, it may encourage clients to approach their student about quitting. The literature confirms that this is a minimal intervention that all dental clinics should provide.[3,25]

TCC must provide clients with strategies to help them quit, and a high percentage of clients (47 percent) indicated that they were not provided with strategies to assist them in the quitting process. One important strategy that helps clients quit is nicotine replacement therapy. Because of our affiliation with Dalhousie University School of Pharmacy, an opportunity exists at Dalhousie University School of Dentistry to advance students' knowledge of pharmacotherapy by using an interdisciplinary approach to teaching TCC. The pharmacology course that dental hygiene students take could discuss the mechanisms and effectiveness of pharmacologic adjuncts and thereby aid students' abilities to advise clients.

The survey results indicated only 2 percent of the respondents quit permanently, but 22 percent of the respondents had quit temporarily. Compared to the Canadian Tobacco Use Monitoring Survey (2008) showing the average national quit rate was 61.5 percent,[27] Dalhousie's TCC outcome is unsatisfactory. The literature confirms it is common for people to have three or four quit attempts before succeeding,[1,3,6,27] so it is not surprising to see these results. Those clients who quit after TCC require follow-up and support to prevent relapse.[3,24,25] Ninety-two percent of the respondents in our study indicated they received no follow-up therapy support after TCC. This may have been a critical factor contributing to tobacco use relapse amongst the Dalhousie University Dental Clinic clients.[24] Students must now demonstrate documentation of follow-up therapy as part of their client care.

One of the objectives of TCC at Dalhousie University is to teach clients how to do an oral self-examination. While 98 percent of responding clients indicated that they received information about the health risks associated with tobacco use, only 33 percent stated that they were taught how to do an oral self-examination. Students must now demonstrate teaching clients to do a self-exam as part of their competency-based program. In addition, a brochure

describing the procedure is now available for the clients to take home with them.

It was discovered that there was no one person in charge of monitoring the many facets of the TCC program. Not only had the literature reinforced the importance of this,[3,10,11] but the results of the survey also reflected the need.

Conclusions and Recommendations

Based on the results obtained through the TCC survey, it was concluded that the current TCC being provided by Dalhousie dental hygiene students needed to be improved in order to meet its objectives. It was further concluded that the TCC curriculum at Dalhousie University needed to be reevaluated and changes implemented.

The following recommendations were made to improve Dalhousie University School of Dental Hygiene's TCC program. The only recommendation that has not been incorporated by the School of Dental Hygiene at this time is the number five recommendation: changes to the medical history form. The Dalhousie University Faculty of Dentistry is currently reviewing and updating this form, and it will contain increased information on tobacco use when it is complete.

We feel these recommendations would be a benefit to any educational institution hoping to establish an effective TCC program:

1. Appoint a TCC coordinator to manage and provide quality assurance for the program.
2. Emphasize the importance of individualized motivational counseling by teaching motivational interviewing techniques.
3. Use a problem-based approach in teaching the didactic portion of the TCC curriculum.
4. Provide updated TCC resources that are readily accessible to students in the clinic.
5. Incorporate increased information on tobacco use into the client's medical history form.
6. Ensure that post-counseling follow-up and support are implemented into the TCC program.
7. Develop an interdisciplinary approach to TCC with other health professionals.
8. Facilitate faculty development within Dalhousie University Faculty of Dentistry.

Dental hygiene is a profession whose main objective is to promote oral health and prevent oral disease. TCC is a skill that can help prevent serious, life-threatening illness. It is an important component of the curriculum that requires time to develop the skill and confidence needed to transfer into the dental hygiene practice. Educators in dental hygiene must continue to support the development and implementation of this vital skill.

We will reevaluate the Dalhousie University TCC program after the outlined recommendations have been implemented for a two-year period. The purpose will be to measure current effectiveness and establish what further changes may be required.

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