Tobacco Dependence Education in U.S. Dental Assisting Programs’ Curricula

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Abstract: The aim of this study was to assess the level of tobacco dependence education (TDE) in the curricula of U.S. dental assisting programs and to compare the findings to those from a similar assessment of dental hygiene curricula. In the 2012-13 academic year, a 51-item survey was sent to directors of all 298 accredited dental assisting programs. Assessed were curricular TDE content, time spent on each topic, expected levels of clinical competence, and resources used. Of the 298 potential participants, 89 programs returned completed surveys, for a response rate of 30%. Of the 13 TDE-related content areas, those most often covered were oral disease related to tobacco use (100%) and general diseases related to tobacco use (93%); those least often covered were stages of (behavior) change (29%), how to develop a comprehensive tobacco intervention program in a private office setting (23%), and strategies for community-based tobacco control (22%). Responding program directors indicated the following levels of tobacco cessation intervention at which students should demonstrate competence: brief, 44%; moderate, 55%; intensive, 8%. Less than half of the reporting programs conducted a formal assessment of clinical competence in any TDE-related skills; however, skills in assessing patient tobacco use and associating head and neck findings to tobacco use were formally or informally assessed by 74% and 61%, respectively. Compared to dental hygiene programs, TDE appeared to play a smaller role in the curricula of dental assisting programs, and dental assisting programs were less likely to formally assess clinical competence in TDE.

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The recently published report titled The Health Consequences of Smoking: 50 Years of Progress, A Report of the Surgeon General reiterates the fact that tobacco use remains the nation’s leading preventable cause of morbidity and mortality and highlights a host of new diseases that are causally linked to smoking, including age-related macular degeneration and diabetes mellitus. Moreover, tobacco use can adversely impact oral health by increasing a user’s risk of periodontitis, benign and malignant oral and maxillofacial conditions, tooth loss, and implant failure. Tobacco use, in both smokeless and smoked forms, is a significant oral health problem; therefore, intervention by dental professionals is warranted. Additionally, with the growing body of evidence to support the link between oral and general health, tobacco dependence treatment by oral health providers reinforces the goals of integrated health promotion and holistic patient care.

The U.S. Public Health Service Clinical Practice Guideline Treating Tobacco Use and Dependence recommends that all health care providers deliver brief tobacco interventions and serve as an evidence-based resource to help clinicians address tobacco use and dependence in their patient populations. The guideline details pharmacological and behavioral approaches to tobacco dependence treatment including the “5As” brief intervention: asking patients about tobacco use, advising them to quit, assessing their willingness to quit, assisting in their quit attempt, and arranging for follow-up to evaluate progress. The guideline also describes the “5Rs,” which are used with individuals who are not ready to make a quit attempt and consist of the following: dis-
cussing with the patient the relevant reasons to quit, the risks associated with continued tobacco use, the rewards of cessation, and the roadblocks or barriers to quitting, as well as asking the patient permission to consider the issue again in the future (repetition).

It is estimated that over 50% of smokers visit a dental practice at least once every year. Compared to medical appointments, dental visits are often longer and emphasize patient education and preventive health behaviors. These characteristics provide an opportunity to identify and engage at-risk individuals who may otherwise be unlikely to receive preventive services. However, while there is ample evidence that dental office tobacco treatment and prevention efforts are effective and can increase patient tobacco abstinence, they are underutilized. While most dentists and dental hygienists ask about patient tobacco use, few perform the more intensive elements of the 5As intervention, even though patient surveys indicate that the majority of tobacco users desire to quit and support such interventions. However, patients may not ask for help, thus necessitating that the practitioner initiate the discussion about quitting tobacco.

Barriers cited by dentists and dental hygienists for not providing interventions include low confidence in their ability to provide such services and a lack of knowledge and training in tobacco dependence treatment. Likewise, although dental students view tobacco interventions to be within their scope, they have also reported feeling unprepared to provide patients with proper tobacco cessation resources. Providing an effective tobacco intervention requires participation by each health care team member and necessitates they have the appropriate training.

Most predoctoral dental education programs include some level of tobacco dependence education (TDE) in their curricula. Considering that the American Dental Education Association (ADEA) Competencies for the New General Dentist include the need for graduates to be competent in recognizing and managing substance abuse, dental programs have sought to enhance their tobacco-related curricula, clinical experience for students, and policies. Compared to other health professions schools, dental hygiene programs devote a far greater number of clock hours to TDE, although few of them train and assess on the more complex elements of the 5As. Additionally, assessment is often informal, and there are minimal standards for TDE across curricula.

Training dentists and their staff members has been shown to enhance their effectiveness in providing tobacco interventions. Over two decades ago, Christen and Christen noted that while tobacco-related continuing education is available to dental assistants, it may be most beneficial for them to receive TDE during their formal educational program. However, little attention has been given to the importance of TDE in the curricula of dental assisting programs. We hypothesized that TDE is not a standardized and consistent part of dental assisting curricula. The aim of this study was to assess the level of tobacco dependence education in accredited U.S. dental assisting programs. The results could provide information concerning the extent to which dental assisting graduates are prepared to provide tobacco interventions in clinical practice and provide an indication of the need for potential curricular changes.

**Methods**

This study, approved by the Indiana University Institutional Review Board (IRB # 1201007832), employed a cross-sectional survey design. The 51-item survey instrument used was adapted from the survey of tobacco dependence education in dental hygiene programs developed and validated by Davis and Koerber and Stockdale et al. The survey was modified only slightly in language to suit dental assisting programs; and using a small cohort of dental assisting faculty members at the Indiana University School of Dentistry, it was refined based on feedback. Response formats included fill-in, multiple-choice, and rating scale items. Survey items assessed the following: perceived confidence in teaching and in barriers to teaching TDE; curricular content; time spent on each TDE topic; resources used; and expected levels of clinical competence.

The Levels of Care Model was utilized in the survey to assess the respondents’ expectations for levels of clinical competence they felt dental assisting graduates should obtain. This model consists of three levels of intervention: brief, moderate, and intensive. Brief interventions range from 30 seconds to one minute in length and include the ask, advise, and refer steps to identify a tobacco user, relate the patient’s oral health condition to tobacco use, and refer the patient for assistance in quitting. Moderate interventions range between five and 15 minutes in length and involve the 5As, motivational interviewing, discussion of cessation medications, and the 5Rs approach for patients who are unmotivated to make a quit attempt. Typically, an intensive intervention is
20 minutes or more in duration and includes multiple sessions that combine all elements of the moderate intervention with consideration of previous successes and challenges plus the formation of a detailed, personalized quit plan.

During the 2012-13 academic year, contact information for program directors of current accredited dental assisting programs in the United States was obtained from the Commission on Dental Accreditation (CODA). Program directors of all accredited U.S. dental assisting programs (N=298) received an initial postal mailing inviting them to participate. The mailing included the survey along with a cover letter, study information sheet, and a self-addressed, stamped return envelope. Survey responses were confidential; however, surveys were numerically coded by institution and tracked for completion. Two follow-up mailings were sent to nonrespondents: four weeks after the initial mailing, a second mailing of the complete survey packet was sent, and at eight weeks, nonresponding programs were sent a postcard with a web address to access the survey electronically.

Responses from completed surveys were reviewed, coded, and entered into an electronic database for statistical analysis. Data analysis included counts, percentages, and descriptive statistics. The associations between competency level and topic covered, competency and assessments, program type and topic covered, and program type and competency were evaluated using chi-square tests. The associations between competency and categorized time spent on topic, competency and assessments, and program type and categorized time spent on topic were evaluated using Mantel-Haenszel chi-square tests for ordered categorical data. The associations of competency and time spent on topic, number of students and topic covered, number of students and competency, and program type and time spent on topic were evaluated using Wilcoxon rank-sum tests. The associations between number of students and time spent on topic were evaluated using Spearman correlation coefficients.

Results

Of the 298 potential participants, 89 programs returned completed surveys for a 30% response rate. Overall, the characteristics of the responding programs were similar to those of U.S. accredited dental assisting schools as a whole: 65% were certificate programs, 10% associate degree programs, 24% offered both, and 3% were affiliated with a dental school. Programs reported a mean number of full-time faculty members of 2.27 (SD=2.75) and part-time faculty members of 2.57 (SD=3.40), with two faculty members (SD=3.09) devoted to clinic or lab only.

Most of the responding programs (71%, 69 programs) stated that they focus TDE on identifying tobacco users and referring them to an outside tobacco cessation counseling resource. Only 4% (three programs) reported a dedicated tobacco cessation clinic where patients received intensive counseling, and only 7% had supervising dentists who prescribe tobacco cessation medications. Of these programs 21% indicated the presence of a faculty tobacco “champion” who provided most or all of the TDE and was responsible for all of the clinical tobacco interventions.

The survey asked how tobacco-related material was presented in dental assisting programs. Of the responding programs, 61% reported offering tobacco-related material in several courses including lecture and clinic. Courses most often containing tobacco-related content were oral pathology (91%), preventive dentistry (76%), pharmacology (44%), clinical science (33%), clinical rotations (23%), and clinical seminar (18%). TDE was offered in a case study format by 21% of these programs, and in 12% it was offered only through clinic/clinical seminars.

Respondents were asked to indicate, on a five-point scale (from 1=not confident at all to 5=very confident) their perception of faculty confidence in six aspects of TDE instruction. Means ranged from a low of 3.45 (confidence in helping students overcome employer dentists’ concerns about implementing tobacco control education in the dental practice) to a high of 4.09 (confidence in teaching tobacco-related pathology).

TDE Curricular Content, Time, and Educational Resources

Respondents were asked to indicate their level of agreement with a series of statements concerning barriers to teaching TDE on a five-point scale from
develop a comprehensive tobacco intervention program in a private office setting (23%), and strategies for community-based tobacco control (22%).

Mean curriculum time for all content areas ranged from 5.1 minutes to 43.5 minutes, with a mean of 17 minutes. Less than half of all responding programs reported conducting a formal assessment of clinical competence in any of the seven TDE-related skills. However, skills in assessing whether a patient

Table 1. Dental assisting program directors’ perceived barriers to providing tobacco dependence education, by overall mean (SD) and by number and percentage of total respondents according to agreement with statement (N=87)

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Mean (SD)</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a program, we lack enough class and clinic time to devote to tobacco education.</td>
<td>3.08 (1.11)</td>
<td>9 (10%)</td>
<td>16 (18%)</td>
<td>28 (32%)</td>
<td>27 (31%)</td>
<td>7 (8%)</td>
</tr>
<tr>
<td>As a program, we have all the evidence-based tobacco educational materials/resources we need.</td>
<td>2.68 (1.10)</td>
<td>16 (18%)</td>
<td>20 (23%)</td>
<td>30 (34%)</td>
<td>18 (21%)</td>
<td>3 (3%)</td>
</tr>
<tr>
<td>As a program, we lack tobacco cessation counseling resources to make needed referrals.</td>
<td>3.14 (1.31)</td>
<td>12 (14%)</td>
<td>18 (21%)</td>
<td>18 (21%)</td>
<td>24 (28%)</td>
<td>15 (17%)</td>
</tr>
<tr>
<td>Our clinical faculty members (assistants and dentists) support and encourage tobacco cessation in our clinics.</td>
<td>3.95 (1.07)</td>
<td>3 (4%)</td>
<td>5 (6%)</td>
<td>17 (20%)</td>
<td>28 (33%)</td>
<td>32 (38%)</td>
</tr>
<tr>
<td>Our faculty members currently possess the basic counseling skills to teach, model, and assess brief motivational interviewing in the classroom and clinic.</td>
<td>3.39 (1.11)</td>
<td>7 (8%)</td>
<td>9 (10%)</td>
<td>27 (31%)</td>
<td>31 (36%)</td>
<td>13 (15%)</td>
</tr>
<tr>
<td>Our faculty members would benefit from training in tobacco cessation interventions including brief motivational interviewing.</td>
<td>4.09 (0.98)</td>
<td>2 (2%)</td>
<td>3 (3%)</td>
<td>16 (19%)</td>
<td>29 (34%)</td>
<td>36 (42%)</td>
</tr>
<tr>
<td>Our faculty members lack the interest and motivation to teach tobacco education as an integral part of patient care.</td>
<td>1.77 (0.92)</td>
<td>43 (49%)</td>
<td>27 (31%)</td>
<td>11 (13%)</td>
<td>6 (7%)</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: For mean, ranking was on a five-point scale from 1=strongly disagree to 5=strongly agree.

Table 2. Percentage of dental assisting programs (N=89) with each area in curriculum, in order of frequency and compared to dental hygiene programs

<table>
<thead>
<tr>
<th>Content Area</th>
<th>% with Area in Curriculum Dental Assisting (Dental Hygiene)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral diseases related to tobacco use</td>
<td>100% (95%)</td>
</tr>
<tr>
<td>General diseases related to tobacco use</td>
<td>93% (95%)</td>
</tr>
<tr>
<td>Dental assisting students’ own use of tobacco</td>
<td>83% (71%)</td>
</tr>
<tr>
<td>Factors associated with tobacco use and the tobacco industry</td>
<td>72% (86%)</td>
</tr>
<tr>
<td>Nicotine addiction/dependence</td>
<td>67% (90%)</td>
</tr>
<tr>
<td>Understanding tobacco prevention strategies</td>
<td>59% (86%)</td>
</tr>
<tr>
<td>FDA-approved pharmacotherapies to assist cessation</td>
<td>55% (93%)</td>
</tr>
<tr>
<td>Understanding tobacco cessation strategies</td>
<td>54% (86%)</td>
</tr>
<tr>
<td>Brief motivational interviewing</td>
<td>41% (72%)</td>
</tr>
<tr>
<td>U.S. Public Health Service’s 5As and 5Rs</td>
<td>38% (82%)</td>
</tr>
<tr>
<td>Stages of change</td>
<td>29% (74%)</td>
</tr>
<tr>
<td>Developing a comprehensive tobacco intervention in a clinical setting</td>
<td>23% (57%)</td>
</tr>
<tr>
<td>Strategies for becoming involved in a community-based tobacco control program</td>
<td>22% (45%)</td>
</tr>
</tbody>
</table>

uses tobacco and associating head and neck findings to tobacco use were formally (with a form) or informally (observation or verbal comment) assessed by 74% and 61% of the respondents, respectively (Figure 1). The program directors reported using a variety of resources for TDE: textbooks (used by 77%), websites (54%), organizations such as the American Cancer Society (37%), professional journals (36%), government agencies (26%), and workshops/conferences (13%). Fewer than 10% of the respondents reported using the American Dental Hygienists’ Association’s Tobacco Initiative “Ask, Advise, Refer” or the nationally available standardized TDE curricula Tobacco Free! Curriculum and Rx for Change.

Expected Levels of Clinical Competence

In indicating the level of tobacco cessation competence students should be able to demonstrate upon graduation, 44% of responding program directors said brief intervention, 55% reported moderate intervention, and 8% replied intensive intervention (Figure 2). These program directors’ expectations of student competence in a brief intervention were significantly associated with less frequent coverage (p=0.014, n=87, χ²=5.98, df=1) and less curriculum time spent on the following content areas: factors associated with tobacco use (p=0.038, n=86, Wilcoxon statistic=1375, df=1); nature of nicotine addiction (p=0.038, n=86, Wilcoxon statistic=1419.5, df=1); developing a comprehensive tobacco intervention program in a private office setting (p=0.034, n=86, Wilcoxon statistic=1429.5, df=1); and addressing dental assistants’ own use of tobacco (p=0.046, n=87, Wilcoxon statistic=1440.5, df=1). Their expectations for student competence in a moderate intervention were significantly associated with more frequent coverage (p=0.033, n=87, χ²=4.56, df=1) and more curriculum time (p=0.033, n=86, Wilcoxon statistic=1545, df=1) for the topic stages of change, as well as more frequent coverage (p=0.0015, n=87, χ²=5.86, df=1) and more curriculum time (p=0.001, n=86, Wilcoxon statistic=1367, df=1) for the topic tobacco cessation pharmacotherapy.

There were no significant associations between competency assessment type (formal, informal, or none) and the level of tobacco cessation competence that the program directors believed students should attain (p>0.10, n=81 to 84, df=2). The program directors’ favoring student competence in a moderate intervention was associated with more frequent

![Figure 1](image-url)

Figure 1. Percentage of responding dental assisting programs assessing clinical competence in various tobacco-cessation counseling activities: formally (with a form), informally, or not assessed, as compared to dental hygiene programs

understanding cessation strategies, and the stages of health behavior change were covered by less than half of the reporting programs. However, these areas are important for dental assistants who interact with patients and are in a position to encourage cessation or discuss tobacco-related concerns. Notably, there was a lack of attention to tobacco implementation issues in the clinically oriented courses, with seemingly greater integration of tobacco-related concerns in nonclinical courses. Considering the frequency of topics covered, this finding likely reflects the presence of TDE in association with didactic courses such as pathology. Although TDE instruction and assessment may be easier via such courses, clinical implementation and assessment are key to reinforcing TDE concepts and their importance in clinical practice.

As in Davis and Koerber’s study of dental hygiene programs, the dental assisting programs in our study reported inconsistencies in the assessment of only two of the seven TDE skills: associating head and neck findings to tobacco use ($p=0.035$, $n=80$, $\chi^2=6.66$, df=2) and determining stage of change among tobacco users ($p=0.01$, $n=81$, $\chi^2=9.18$, df=2).

**Comparison to Dental Hygiene Programs**

We also compared the results of this study to those of Davis and Koerber, who used the same survey to assess TDE in U.S. dental hygiene programs. Compared to the dental hygiene program results (Table 2), of the 13 TDE content areas, only two areas (oral diseases related to tobacco use and students’ own use of tobacco) were covered more often by the dental assisting programs. Dental assisting program directors also reported less curricular time for each of the content areas, with the exception of addressing students’ own use of tobacco.

When compared to dental hygiene programs, we found that dental assisting programs performed far less assessment, both informal and formal, of clinical tobacco interventional skills (Figure 1). The most commonly assessed skills in both dental hygiene and dental assisting programs were whether the student noted that the patient used tobacco (40%), followed by whether the student linked oral findings to tobacco use (30%). Most directors of both dental assisting and dental hygiene programs believed their students should attain a level of clinical competence at the moderate level of tobacco intervention; however, the dental assisting program directors were nearly split between moderate and brief intervention levels (Figure 2).

**Discussion**

Tobacco cessation interventions provided through dental practices can be effective at helping patients quit, and educational training can have a positive impact on practice behaviors. This study aimed to assess the status of TDE currently offered in accredited dental assisting programs in the United States. Consistent with our hypothesis, the results indicated that TDE is not a consistent and standardized part of dental assisting curricula. Mean curriculum time for all TDE content areas combined was less than 20 minutes, and TDE topic areas were inconsistently covered. Essential but more complex topics such as brief motivational interviewing, the 5As, 5Rs, understanding cessation strategies, and the stages of health behavior change were covered by less than half of the reporting programs. However, these areas are important for dental assistants who interact with patients and are in a position to encourage cessation or discuss tobacco-related concerns. Notably, there was a lack of attention to tobacco implementation issues in the clinically oriented courses, with seemingly greater integration of tobacco-related concerns in nonclinical courses. Considering the frequency of topics covered, this finding likely reflects the presence of TDE in association with didactic courses such as pathology. Although TDE instruction and assessment may be easier via such courses, clinical implementation and assessment are key to reinforcing TDE concepts and their importance in clinical practice.

As in Davis and Koerber’s study of dental hygiene programs, the dental assisting programs in our study reported inconsistencies in the assess-
A premise underlying our study is the idea that dental assistants can and should play a role in a team approach to dental office-based tobacco dependence intervention programs. The team approach shown in Figure 3 highlights key roles each team member may play. As the dental hygienist typically has more patient contact time than the dentist and is trained as an oral health educator respective of preventive services, this approach recommends that the dental hygienist serve as coordinator for the tobacco dependence treatment program. This approach is efficient and cost-effective, and CDT code D1320 (Tobacco Interventions for the Control and Prevention of Oral Disease) can be used for dental office-based tobacco counseling. Dental assistants are also well suited to perform important functions in the tobacco intervention program—for example, taking responsibility for the 5As Assess, Assist, and Arrange steps, which are often not performed because they require more complex skill sets and a higher degree of coordinated clinical activity. Additionally, dental assistants can communicate with patients using specific language that supports the efforts of the other team members.

Dental assistants have reported a desire for more training to expand their skill sets, contribute more effectively and efficiently in the team, increase their employment opportunities, and improve their status among oral health care providers and the public. Learning and utilizing tobacco dependence treatment skills as part of an interdisciplinary team would advance these goals.

Our findings in this study lead us to make the following recommendations:

1. Improve dental assisting faculty development in tobacco dependence treatment via workshops or other programs offering evidence-based information.
2. Encourage at least one faculty member in each program to obtain certification as a tobacco dependence treatment specialist.
3. Focus curriculum time and resources toward the consistent learning, clinical application, and clinical assessment of tobacco dependence treatment skills to at least the brief intervention level.
4. Overcome barriers in the clinical setting by emphasizing associations between tobacco use and oral health and employing basic motivational interviewing strategies (e.g., using structured advice protocols that can increase involvement of dentists in tobacco dependence treatment interventions) and integrating computer clinical decision support systems that can increase inter-

...
than in dental hygiene programs. Dental assisting programs were also less likely than dental hygiene programs to formally assess clinical competence in TDE. These results likely reflect, in part, the fact that dental assisting programs are shorter in length than dental hygiene programs. However, we argue that the issue of tobacco use and dependence is so critical to health that a deliberate effort should be made to improve upon and coordinate an interdisciplinary team approach to tobacco dependence education and treatment across all oral health education programs. The dental assistant’s role should be expanded to maximize use of these professionals’ full range of knowledge, skills, and abilities.

Figure 3. Team approach to dental office tobacco interventions

**Conclusion**

This study found that tobacco dependence education appears to play a smaller role in the curricula of accredited U.S. dental assisting programs than in dental hygiene programs. Dental assisting programs were also less likely than dental hygiene programs to formally assess clinical competence in TDE. These results likely reflect, in part, the fact that dental assisting programs are shorter in length than dental hygiene programs. However, we argue that the issue of tobacco use and dependence is so critical to health that a deliberate effort should be made to improve upon and coordinate an interdisciplinary team approach to tobacco dependence education and treatment across all oral health education programs. The dental assistant’s role should be expanded to maximize use of these professionals’ full range of knowledge, skills, and abilities.
Acknowledgments

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