Evaluation of an Interprofessional Tobacco Cessation Train-the-Trainer Program for Respiratory Therapy Faculty

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BACKGROUND: Although tobacco use is the leading cause of numerous preventable diseases, including respiratory illnesses, respiratory therapy students historically have received inadequate education for treating tobacco use and dependence. To address this gap, a respiratory-specific tobacco cessation training program was created and disseminated via a train-the-trainer approach for faculty in respiratory therapy and respiratory care programs across the United States. The purpose of this study was to estimate the impact of the live, web-based, train-the-trainer programs on participating faculty, and to assess changes in the extent of adoption of tobacco cessation content in respiratory therapy curricula across institutions in the United States. METHODS: Five live, 2.5-h web-based train-the-trainer programs for respiratory therapy faculty were conducted. To characterize impact of this national initiative, surveys were administered at baseline, immediately after training, and then at the end of the subsequent academic year. RESULTS: A total of 270 respiratory therapy faculty members participated in a live webinar training, representing 248 of the 402 (61.7%) respiratory therapy schools in the United States. At the end of the subsequent academic year, faculty reported significant improvement in their overall ability to teach tobacco cessation ($P <$ .001). Nearly all (97.4%) agreed that the webinar train-the-trainer format was conducive to learning, and high self-ratings were reported for skills to teach the tobacco cessation content. During the 2016–2017 academic year, 1,248 respiratory therapy students received training. Faculty anticipated teaching a median of 3 h of tobacco cessation in the subsequent academic year. CONCLUSIONS: Training respiratory therapy faculty using a train-the-trainer approach had a positive impact on faculty's perceived confidence and ability to teach tobacco cessation at their institutions. *Key words: respiratory therapy; respiratory therapist; tobacco; tobacco cessation; smoking; smoking cessation; train-the-trainer.* [Respir Care 2021;66(3):475–481. © 2021 Daedalus Enterprises]

Introduction

Tobacco use is the leading known preventable cause of disease and death,[1] and although the detrimental effects of tobacco use are well established, an estimated 13.7% of Americans were current cigarette smokers in 2018.[2] One of the key negative health consequences of smoking is respiratory disease, in that approximately 50% of all deaths attributable to smoking are due to lung cancer or other pulmonary diseases.[3,4] Most tobacco users understand the health risks and consequences associated with tobacco use;

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two thirds of tobacco users report that they would like to quit, and approximately half report making a quit attempt in the past year.[5] However, most quit attempts are unsuccessful, with estimated quit rates of only 7.4%.[5] Because receiving counseling from a clinician can approximately double patients' odds of quitting,[6] it is essential to prepare healthcare professionals to identify and assist tobacco users by applying evidence-based strategies to aid tobacco cessation efforts. In response to this need, a shared evidence-based tobacco cessation curriculum (*Rx for Change: Clinician-Assisted Tobacco Cessation*, available at: https://rxforchange.ucsf.edu, *accessed August 24, 2020*) was developed in 1999 and has been widely disseminated. Since inception, Rogers' Diffusion of Innovations theory[7] has been used to guide program development, dissemination, and assessment.[8]

Historically, the respiratory therapy profession has received surprisingly little attention from the broader tobacco-control community. Of all health disciplines, respiratory therapists are a particularly important target for smoking cessation training for two reasons: smoking significantly impacts pulmonary function, and patients with pulmonary illnesses often interface with respiratory therapists for both acute and chronic care of their condition(s). As such, respiratory therapists are well positioned to identify tobacco users, provide cessation assistance, and refer patients to a tobacco quitline or other resources for additional support. A survey study published in 2010 indicated that respiratory therapy students receive minimal education on tobacco cessation,[9] and a survey conducted in 2007 determined that several tobacco cessation content areas were inadequately covered in the core curricula of respiratory therapy students.[10] Key barriers to increasing the tobacco content included insufficient time in the curriculum, lack of faculty expertise, and lack of access to comprehensive evidence-based tobacco cessation teaching materials.[10]

To address this critical gap, a respiratory therapy-specific version of the *Rx for Change* curriculum was created and disseminated through a series of 5 live, web-based train-the-trainer sessions conducted between October 2015 and February 2016. The purpose of this study was to estimate the impact of the train-the-trainer programs on participating respiratory care faculty and to characterize the extent of adoption of the tobacco cessation content into respiratory care curricula across the United States in the subsequent academic year (ie, 2016–2017).

Methods

Training Program Development

A 4-h comprehensive training program was developed for students in respiratory therapy or respiratory care degree programs, along with an associated 2.5-h train-the-trainer program for faculty members. All faculty training sessions,

QUICK LOOK

Current knowledge

Although tobacco use is the leading cause of numerous preventable diseases, including respiratory illnesses, respiratory therapy students historically have received inadequate education for treating tobacco use and dependence. Previously identified and addressable barriers to enhanced tobacco cessation education in respiratory therapy or respiratory care degree programs include lack of faculty expertise and lack of access to comprehensive, evidence-based, tobacco cessation teaching materials.

What this paper contributes to our knowledge

A shared, national tobacco cessation curriculum disseminated to respiratory therapy and respiratory care degree programs via a web-based train-the-trainer approach for faculty positively impacted perceived confidence and ability to teach tobacco cessation at their institutions. This initiative resulted in a meaningful increase in the median total number of hours of tobacco content taught in respiratory care programs across the United States.

which were provided along with continuing education units at no cost, emphasized the ask-advise-refer (to the tobacco quitline or other resources) approach to cessation and aimed to equip faculty with working knowledge of the 7 FDA-approved medications for cessation.

The core content was developed and delivered to respiratory care faculty by an interprofessional team of faculty representing respiratory therapy, pharmacy, and counseling psychology. Five external expert consultants and members of the collaborative research team at the American Association for Respiratory Care reviewed the content of the curricular materials. A dedicated web page, hosted on the *Rx for Change* web site, was created and populated with the newly developed teaching resources. The teaching materials, tailored specifically for respiratory care, included PowerPoint slide sets with detailed instructor notes, audience handouts, respiratory care-specific counseling videos and "Tobacco Trigger Tapes" (ie, brief video segments—usually 1–2 phrases from an actor who plays the role of a patient—that are used as a stimulus to elicit, or "trigger," responses from the audience), and case scenarios for role-playing. A duration of 4 h was recommended for respiratory therapy students, which allowed an adequate amount of time to cover all key content areas and provided at least 1 h for guided practice through role-playing with case studies. This is less than the 6 h that is recommended for training pharmacy students,[11] largely because pharmacists are more involved with medication selection and counseling practices.

Five live, web-based, train-the-trainer programs were presented. These trainings reviewed all of the core curricular modules, discussed use of the various teaching tools, and provided an overview describing how to navigate the *Rx for Change* web site to access the curricular content. Learning objectives addressed participants' ability to explain population-based trends of tobacco use in the United States; to describe the impact of smoking on the respiratory system; to describe the pharmacologic effects of nicotine and principles of nicotine addiction; to apply a brief intervention model (ask, advise, and refer) when counseling patients for tobacco cessation; to discuss the proper use of FDA-approved medications for smoking cessation; to describe the components of a tobacco cessation curriculum for respiratory therapy students, including slides, videos, and handouts; and to describe methods and teaching strategies for implementing the *Rx for Change* tobacco cessation curriculum in a respiratory therapy or respiratory care program.

Trainees were encouraged to implement the full 4-h training program for students in the upcoming academic year, including time allocated for role-playing to enhance self-efficacy for counseling. Timely post-training support (ie, answers to questions about specific content or teaching methods) was provided to faculty as they integrated the content into their existing respiratory care curricula. To estimate the extent of curricular adoption of the materials, a follow-up survey of faculty participants was conducted at the end of the subsequent academic year. All surveys are available upon request from the first author.

Study Design and Participants

In this 1-group, prospective cohort study, faculty participants were asked to complete 3 surveys to estimate the impact of the training and characterize the extent to which tobacco cessation is addressed in their respiratory care curricula. A baseline survey was administered before the training, a post-training survey was given immediately after training (this survey was also linked to continuing education credit), and a follow-up survey was administered at the end of the upcoming academic year.

With a goal of recruiting at least one faculty member from each of the nation's accredited respiratory therapy or respiratory care programs, e-mail invitations were sent to program directors to inform them about the study and to request assistance in identifying a faculty member to participate in the training. Follow-up telephone calls were made to enhance participation. Recruitment for the 5 live workshops occurred between August 2015 and January 2016, and a $25 Amazon.com gift card was provided for individuals who consented to participate and completed all study surveys. Faculty participation in a live, web-based train-the-trainer program was a requirement for participation in the study (ie, completion of 3 surveys); however, study participation was not a requirement for participating in a training program or for use of the curricular materials. Individuals who did not consent to the research study were not included in the analyses presented here. Study procedures were reviewed and approved by the Purdue University Human Research Protection Program.

Data Collection and Measures

Baseline and follow-up surveys (distributed at the end of the 2016–2017 academic year) were administered online via Qualtrics to faculty participating in the research aspect of the program. Additionally, a brief set of questions was embedded into a post-training evaluation survey, which was required of participants to receive continuing education credit. These survey items were included in the analysis along with the baseline and follow-up survey data collected from individuals who consented to participate in the research study.

The baseline measures assessed faculty participants' (a) prior formal training for treating tobacco use and dependence and teaching students how to treat tobacco use, (b) prior and current responsibility for teaching tobacco cessation in the respiratory therapy or respiratory care program, and (c) current self-rating of overall ability to teach tobacco cessation to students. Additionally, participants indicated whether tobacco education and intervention skills are integrated into the curriculum as part of a required course or an elective course, or as part of required community service or an outreach activity.

To evaluate the extent to which tobacco cessation is addressed in respiratory therapy or respiratory care curricula, approaches for delivering tobacco-related content were assessed, including class lectures, provision of required teaching materials, case study discussion, patient-centered counseling activity (eg, role-playing, standardized patients), or patient-centered counseling activity with formal evaluation (eg, Objective Structured Clinical Examinations). Faculty were also asked whether they perceived the following topics to be adequately covered in their respiratory care curriculum: epidemiology of tobacco use, impact of tobacco use on respiratory health, nicotine pharmacology and addiction, medications for quitting, and assisting patients with quitting. Importance of key barriers to curriculum adoption were assessed using a 5-point scale (ie, 1 = not at all, 2 = a little, 3 = moderately, 4 = very, 5 = extremely important), including: (a) lack of available curriculum time, (b) lack of financial resources, (c) lack of faculty expertise for the tobacco-related topic, (d) lack of faculty interest in tobacco-related issues, (e) lack of faculty's perceived importance of tobacco-related issues as applicable to a respiratory therapist's practice, and (f) lack of access to comprehensive, evidence-based resources for teaching tobacco-related content.

Survey items administered immediately after training assessed the extent to which the program's learning objectives were met, the extent to which the live webinar format was conducive to learning as a train-the-trainer program, participants' self-rated overall ability to teach tobacco cessation to respiratory care students, confidence for teaching the *Rx for Change* materials, and likelihood of adoption of the *Rx for Change* program in the upcoming academic year. Additionally, respondents were asked to rate the compatibility of *Rx for Change* for integration into the existing curriculum structure, comprehensiveness of the *Rx for Change* program content, and its relative advantage over other content currently taught at their institution.[7]

At the end of the subsequent academic year (ie, after the 2017 spring semester), a follow-up survey instrument assessed participants' self-rated overall ability to teach tobacco cessation to respiratory care students, the number of students exposed to the *Rx for Change* curriculum, and adoption of various components in participants' respiratory care institutions. Response options were none, partial, or full. Finally, faculty were asked (a) whether the *Rx for Change* content would be taught in the next academic year, (b) how many hours of tobacco cessation education would be integrated into the curriculum, and (c) the quality and usefulness of the various curricular components and web site (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent).

Data Analysis

Standard summary statistics were utilized to characterize the population and training levels (eg, means with standard deviations, medians with interquartile ranges), and the Wilcoxon signed rank test was used to compare baseline versus post-training measures of self-rated ability to teach tobacco cessation.

Results

Study Population

A total of 270 faculty members participated in a live webinar, representing 248 (61.7%) of the 402 respiratory therapy or respiratory care degree programs in the United States. Of these 270 faculty members, 203 (75.2%) consented and completed a baseline survey, and 154 (75.9% of 203) completed the post-training survey. At the end of the subsequent academic year, 82 study participants completed a final follow-up survey (40.4% of 203).

Characteristics of the Faculty Population and Academic Programs

Of the 203 respondents, most (98.5%) were faculty members and/or taught in an accredited respiratory therapy

or respiratory care program, and 64.7% indicated that they personally taught courses that included tobacco-related content at their institutions. Overall, 71.9% reported that tobacco education and intervention skills are integrated as part of a required course, 31.5% as part of community service or outreach activities, and 1.5% as an elective course. Some participants (15.8%) indicated that tobacco education and intervention skills were not offered in the curriculum (these categories were not mutually exclusive in the survey).

Prior to this study and the advent of the train-the-trainer program, traditional lectures were used to deliver tobacco-related content by 82.8% of faculty; 56.7% assigned required reading materials to students, 43.8% used case-study discussions, 16.3% had patient-centered counseling activities without formal evaluation, and 6.9% had patient-centered counseling activities with formal evaluation. Faculty indicated that the following tobacco-related topics were inadequately covered in the curriculum: assisting patients with quitting (75.7%), nicotine pharmacology and addiction (63.0%), epidemiology of tobacco use (61.4%), medications for quitting (50.3%), and impact of tobacco use on respiratory health (29.1%). Just over half of respondents (52.4%) perceived a lack of available time in the curriculum as a very or extremely important barrier to increasing tobacco-related content at their institutions. Lack of access to comprehensive evidence-based resources for teaching tobacco-related content was perceived as a very or extremely important barrier by 33.9% of faculty, and 33.3% perceived lack of faculty expertise in the topic was a very or extremely important barrier. Other barriers, perceived to be less important, included: lack of financial resources (18.0%), lack of faculty interest in tobacco-related issues (12.1%), and lack of faculty's perceived importance of tobacco-related issues as applicable to a respiratory care therapist's practice (11.6%).

In the past, 46.6% had received formal training for treating tobacco use and dependence; 44.6% had some training, and 8.8% had extensive training. With respect to training for teaching students how to treat tobacco use and dependence, 72.5% reported no prior training, 26.5% reported some prior training, and 1.1% reported extensive prior training. Respondents rated their overall ability to teach tobacco cessation to their students as poor (8.2%), fair (51.5%), good (29.9%), very good (6.7%), or excellent (3.6%).

Impact of the Train-the-Trainer Program

Of 154 respondents who completed a post-training survey, nearly all (97.4%) agreed or strongly agreed that the webinar format was conducive to learning for this train-the-trainer program, and 2.6% indicated that they were neutral. All respondents perceived each of the 7 learning objectives to be met, with at least 97.0% of respondents indicating

Table 1. Characteristics of and Confidence for Teaching the *Rx for Change* Respiratory Care Program[*]

Faculty Perception	Participant Response, %			
	None	Low	Moderate	High
Compatibility for integration into your existing curriculum structure	1.5	0	63.1	35.4
Relative advantage over other tobacco cessation content that currently is taught in your curriculum	6.2	1.5	27.7	64.6
Relative advantage over other tobacco cessation training programs that are available	4.6	0	46.2	49.2
Acceptability of the complexity of implementing *Rx for Change*	1.5	7.7	60.0	30.8
Comprehensiveness of content	1.5	1.5	36.9	60.0
Appropriateness of teaching methodologies used	1.5	3.1	43.1	52.3
Confidence in skills for teaching the *Rx for Change* materials	1.5	1.5	53.8	43.1

n = 82 respondents.
* As assessed at the end of the academic year.

"good" or "outstanding" for each objective. Nearly two thirds (65.8%) rated their skills for teaching the *Rx for Change* materials as high; 33.6% rated their skills as moderate, and 0.7% as low. More than three fourths (78.6%) reported that they personally have the ability to determine whether the *Rx for Change* materials will be integrated in their institutions' curriculum. Immediately post-training, 66.0% indicated a high likelihood of program adoption in the upcoming academic year; 31.4% indicated moderate likelihood, and 2.6% indicated low likelihood.

A total of 82 participants completed the final follow-up survey at the end of the subsequent academic year, indicating a significant improvement in their self-rated overall ability to teach tobacco cessation compared to their baseline values (median 2.0 vs 4.0 at follow-up; $Z = -6.3$, $P < .001$). Faculty perceptions of various characteristics of the *Rx for Change* respiratory care curriculum are reported in Table 1. When implementing *Rx for Change*, the most commonly used modalities to deliver tobacco-related content were class lecture (75.6%), required readings (62.2%), case study discussion (59.8%), patient-centered counseling activities without formal evaluation (47.6%), and patient-centered counseling activities with formal evaluation (19.5%). Most (67.1%) integrated the tobacco cessation content into required coursework for students. Nearly half (45.1%) included role-playing with case scenarios, 39.0% showed videos of tobacco cessation counseling sessions, and 22.0% showed trigger tapes to elicit audience discussion. Students received the *Rx for Change* curriculum in their first (33.3%), second (48.1%), or across multiple years (18.5%) of the respiratory care curriculum.

Figure 1 shows faculty ratings of the quality and usefulness of the individual curricular components, assessed by faculty at the final follow-up assessment. Quality ratings of at least 4.0 (on a scale of 1–5) included the *Rx for Change* web site (4.1), instructor notes (4.1), and PowerPoint lecture slides (4.0). These 3 components also received the highest usefulness ratings. Most faculty indicated that the *Rx for Change* content would either definitely (50.0%) or

probably (35.3%) be taught at their school during the next academic year (10.3% were unsure; 4.4% indicated "probably not"). The median estimated number of hours to be taught was 3.0, with an interquartile range of 2.0–6.0 hours. This is a 50% increase in the median number of hours reported on the baseline survey for the prior academic year (median 2.0 h, interquartile range 0.8–3.3 h). Combining across 79 faculty members who reported a number of students enrolled, a total of 1,248 respiratory therapy students were exposed to the *Rx for Change* respiratory care curriculum during the 2016–2017 academic year.

Discussion

Given the negative impact of smoking on the pulmonary system, respiratory therapists are an important group of providers for reaching patients who smoke. Although the profession is uniquely positioned to assist patients with quitting, respiratory therapy or respiratory care degree programs historically have provided inadequate tobacco cessation training for students.[9,10] This national initiative catalyzed important changes within educational systems to enhance cessation training for future respiratory therapists. Additionally, the initiative was designed for sustainability, in that the shared curricular materials are provided at no cost, and the teaching materials and web-based train-the-trainer programs are continually updated and available to faculty via the *Rx for Change* web site.

Considering the paucity of tobacco research within the respiratory care discipline, the results of this study provide meaningful contributions to the field. The literature has previously described the positive impact of train-the-trainer programs and training workshops on health-related topics pertaining to respiratory care. For example, a training workshop on inhaler-use techniques showed that health professionals, including respiratory therapists, demonstrated improved inhaler-use skills as a result of the training.[12] Similarly, in this study, the train-the-trainer program had several positive effects: (a) faculty were provided with a
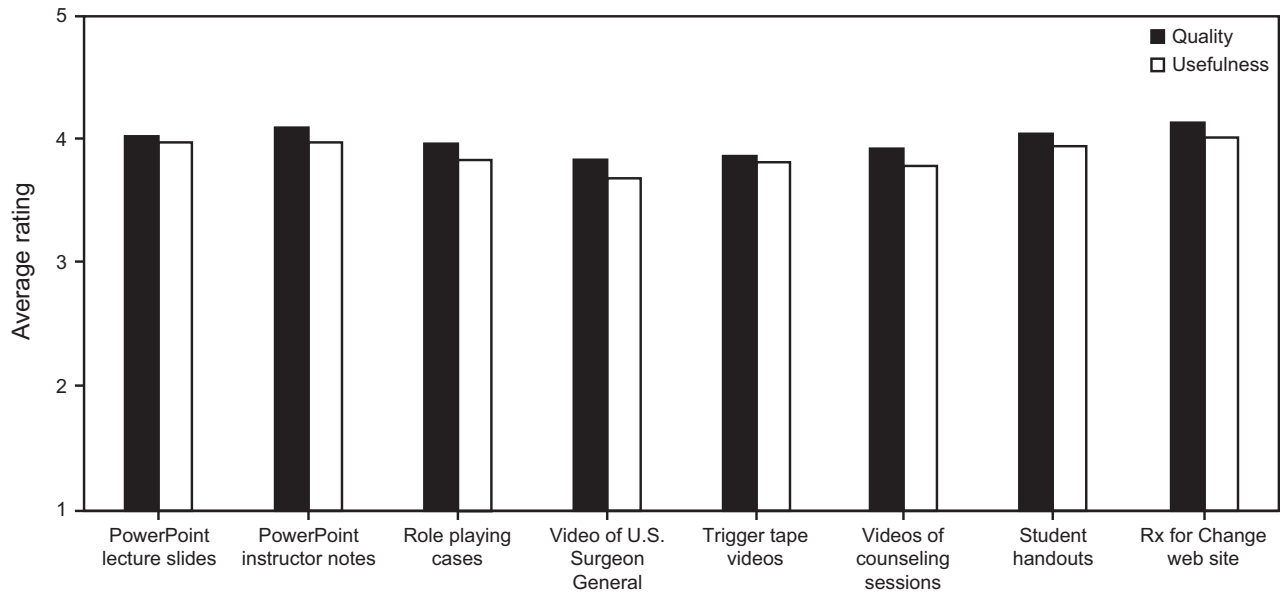
Fig. 1. Faculty perceptions. Quality and usefulness of curricular components and web site (assessed at end of subsequent academic year). 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.

turn-key program that included all the materials needed to assure that their students received a comprehensive education on how to counsel patients for tobacco cessation, (b) the amount of time devoted to teaching tobacco cessation content in respiratory care schools increased substantially, and (c) faculty who received the training perceived an improvement in their skills and confidence for teaching tobacco cessation to students.

The nationwide initiative described here can have a long-term impact by significantly increasing the number of future respiratory therapists who are able to apply evidence-based approaches for tobacco cessation counseling once they enter practice. A previous study reported increased knowledge and self-efficacy in providing tobacco cessation services among participating respiratory therapists after participating in a tobacco cessation educational program.[13] Training respiratory therapist educators is lacking, although it is a much-needed endeavor.[14] The current study adds important data to the literature, characterizing the impact of training on faculty members who will integrate tobacco cessation content into respiratory care curricula. If maintenance or adoption of *Rx for Change* in respiratory therapy or respiratory care programs is similar to that which has been witnessed with a similar national training initiative in pharmacy schools,[8,15] the impact will be both far-reaching and long-lasting.

Because this initiative focused on training faculty to teach tobacco cessation, it was beyond the scope of the study to estimate the impact of future respiratory therapists on their patients' tobacco use. However, training faculty is a necessary first step for teaching respiratory therapy

students tobacco cessation counseling skills and for enhancing the role of the respiratory care profession overall. Although a participation rate of 61.7% of the 402 respiratory therapy or respiratory care degree programs in the United States was achieved, only 40.4% of the study's 203 participants responded to our 1-y follow-up survey. This response which likely was impacted by high faculty attrition in recent years,[16] limits the generalizability of our study findings to determine the true impact of training respiratory therapy faculty. Faculty in our study reported intending to teach a median of 3 h of tobacco cessation content in the next academic year. Although this was a meaningful increase from the academic year prior to the study, our minimum programmatic recommendations for respiratory therapy students is 4 h, thus there is room for continued improvement.

Conclusions

Faculty who completed the training program reported a significant increase in perceived confidence for providing tobacco cessation training (baseline vs post-training), and post-training intention to implement *Rx for Change* at their institution. At 1-y follow-up, there was a substantial increase in the median total number of hours of tobacco content taught in these respiratory therapy or respiratory care programs. Training faculty via a train-the-trainer modality was shown to be feasible and effective in making meaningful changes in tobacco cessation education among respiratory therapy or respiratory care academic institutions. Furthermore, because the *Rx for Change* program is available online and is provided at no cost, the long-term

impact is sustainable and is expected to reach a significant number of respiratory therapists who can impact patients' lives substantially.

ACKNOWLEDGMENTS

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