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BRIEF REPORT

Tobacco Education in U.S. Respiratory Care Programs

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ABSTRACT

Introduction: Exposure to tobacco smoke impacts the onset or exacerbation of most respiratory disorders, and respiratory therapists are well positioned to identify tobacco use and provide cessation assistance. The purpose of this study was to characterize the level of tobacco cessation education provided to students in U.S. respiratory care training programs.

Methods: A national survey of 387 respiratory care programs assessed the extent to which tobacco is addressed in required coursework, methods of instruction, perceived importance, and adequacy of current levels of tobacco education in curricula and perceived barriers to enhancing the tobacco-related education.

Results: A total of 244 surveys (63.0% response) revealed a median of 165 min (IQR, 88–283) of tobacco education throughout the degree program. Pathophysiology of tobacco-related disease (median, 45 min) is the most extensively covered content area followed by aids for cessation (median, 20 min), assisting patients with quitting (median, 15 min), and nicotine pharmacology and principles of addiction (median, 15 min). More than 40% of respondents believed that latter 3 content areas are inadequately covered in the curriculum. Key barriers to enhancing tobacco training are lack of available curriculum time, lack of faculty expertise, and lack of access to comprehensive evidence-based resources. Nearly three-fourths of the respondents expressed interest in participating in a nationwide effort to enhance tobacco cessation training.

Conclusions: Similar to other disciplines, enhanced tobacco cessation education is needed in respiratory care programs to equip graduates with the knowledge and the skills necessary to treat tobacco use and dependence.

INTRODUCTION

Tobacco use is a leading cause of preventable death and disability (U.S. Burden of Disease Collaborators, 2013), and cessation leads to substantial health benefits. In 2008, the United States Public Health Service released an updated guideline for treating tobacco use and dependence (Fiore et al., 2008), which recommends that clinicians of all disciplines ask patients about tobacco use at every visit and provide cessation advice if applicable. Because smoking cessation rates increase substantially when multiple (two or more) types of providers ask about tobacco use compared to being asked by only one provider or not being asked at all (An et al., 2008; Fiore et al., 2008), active involvement by all members of the healthcare team is important.

Because tobacco smoke exposure impacts the onset or exacerbation of most respiratory disorders, respiratory therapists are well positioned to identify tobacco use and provide cessation assistance. In 2010, an estimated 112,700 respiratory therapists were employed in the United States, and this is expected to increase

28% by 2020 (Bureau of Labor Statistics, 2013). Because many of the conditions caused by smoking are respiratory in nature, providing adequate smoking cessation training to this group of clinicians is essential. Indeed, cessation training has a positive impact on the cessation counseling perceptions and behaviors of respiratory therapists (Gordon & Mahabee-Gittens, 2011; Gordon, Mahabee-Gittens, Andrews, Christiansen, & Byron, 2013).

In 2005, the Smoking Cessation Leadership Center at the University of California San Francisco initiated a smoking cessation initiative for respiratory therapists in collaboration with the American Association for Respiratory Care (AARC). With a goal of increasing the number of respiratory therapists who help smokers quit, necessary steps for this initiative were to: (a) characterize the level of tobacco cessation training provided to students in U.S. respiratory care programs and (b) ascertain interest in participating in a nationwide educational effort to equip respiratory care programs with evidence-based knowledge and tools for providing tobacco education. Here, we describe the results of a national survey of respiratory care programs.

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METHODS

Following the 2006–2007 academic year, a survey was mailed to program directors at all 387 respiratory care programs (listing provided by the Committee on Accreditation for Respiratory Care; CoARC). The five-page, self-administered survey was designed to parallel surveys used previously in the U.S. schools of pharmacy (Hudmon, Bardel, Kroon, Fenlon, & Corelli, 2005) and physician assistant programs (Houston, Warner, Fenlon, Corelli, & Hudmon, 2009). The survey was reviewed by members of AARC, CoARC, and the Smoking Cessation Leadership Center.

Respondents were instructed to complete the survey or forward it to the faculty member(s) deemed most appropriate to answer questions concerning their program's tobacco education. Survey administration procedures were as follows: (a) notification E-mail 1 week prior to survey mailing, (b) survey with consent document, (c) E-mail reminder at 4 weeks (after first survey), (d) replacement survey with reminder note at 6 weeks, (e) and second replacement survey mailed to nonresponders at 12 weeks. If a completed survey was not received within 3 weeks after the final survey, a reminder telephone call was made and data collection efforts ceased 1 month later. The study was approved by the Human Research Protection Program at Purdue University.

Measures

Program Characteristics

Programs were characterized by primary terminal degree offering (associate or bachelor's degree), number of students enrolled full-time or part-time, and whether they have a faculty member with specific expertise in tobacco cessation.

Tobacco Cessation Educational Content and Teaching Methods

Tobacco cessation education was divided into 12 different content areas (described in detail elsewhere, Hudmon et al., 2005), and the respondents approximated the number of minutes allocated toward each of these areas in required coursework during the academic year 2006–2007. The 12 tobacco-related

content areas (Table 1) are aligned with the tobacco cessation competencies presented by Geller et al. (2005) and represent the modules of the *Rx for Change: Clinician-Assisted Tobacco Cessation* training program (Corelli et al., 2005; Hudmon et al., 2003; Rx for Change, 2014). Programs were also characterized based on its use of various methods to teach tobacco-related content in required coursework.

Perceived Importance and Adequacy of Coverage of Tobacco-Related Topics

Using a 5-point scale (1 = not at all important, 2 = a little important, 3 = moderately important, 4 = very important, 5 = extremely important), respondents rated their perceived importance of including the 12 content areas in their program's curriculum.

Perceived Barriers to Enhancement of Tobacco Cessation Education

Respondents rated their perceived importance (1 = not at all important, 2 = a little important, 3 = moderately important, 4 = very important, and 5 = extremely important) of six potential barriers to increasing the level of tobacco-related content in their curriculum. Barriers included lack of: available curriculum time, financial resources, faculty expertise for tobacco cessation, faculty interest in tobacco-related issues, faculty's perceived importance of tobacco-related issues as applicable to a respiratory care therapist's practice, and access to comprehensive, evidence-based resources for teaching tobacco-related content.

The final survey question assessed interest level of the respondent's institution in participating in a nationwide effort to enhance the tobacco cessation training of respiratory care students: "Would your institution be interested in participating in a nationwide effort to enhance the tobacco cessation training of respiratory care students? This effort would include access to a comprehensive tobacco cessation training program (designed specifically for health professional students) and costs associated with faculty attendance (1–2 faculty members per respiratory care program) at a national train-the-trainer program." Response options included: 1 = yes, definitely, 2 = yes, probably, 3 = not sure, 4 = no, probably not, 5 = no, definitely not.

Table 1. Time Allocation for Tobacco-Related Content in Required Coursework for Respiratory Care Students (N = 244 Programs)

Tobacco-related topic	Proportion of programs reporting allocated time (%)	Median and 25th–75th quartile ranges (in min)	Respondents who perceive topic to be adequately covered (%)
Pathophysiology of tobacco-related disease	91.2	45 (10–98)	78.0
Aids for cessation (pharmacologic and nonpharmacologic)	86.9	20 (10–30)	59.2
Assisting patients with quitting (the 5 As)	77.3	15 (3–35)	52.7
Nicotine pharmacology and principles of addiction	75.3	15 (0–30)	58.1
Epidemiology of tobacco use	72.9	10 (0–30)	48.8
How to get involved with tobacco control	63.0	5 (0–15)	38.6
Forms of tobacco	61.4	5 (0–10)	46.3
Adolescent and young adult tobacco use	58.5	5 (0–15)	33.6
Drug interactions with smoking	55.5	5 (0–10)	33.9
Weight maintenance in tobacco cessation	40.7	0 (0–5)	28.6
History of tobacco control efforts	39.3	0 (0–10)	29.7
Genes and tobacco use	25.8	0 (0–1)	21.7
Total ^a	93.9	165 (88–283)	–

^aN = 234 programs for which total minutes were able to be computed.

Tobacco education in U.S. respiratory care programs

Statistical Analyses

Statistical analyses included simple summary statistics (medians and interquartile ranges [IQRs]), to characterize item responses. Analyses were conducted using SPSS for Windows version 19.0.

RESULTS

Program Characteristics

Of 387 respiratory care programs, 244 returned completed surveys (63.0%). Most reported an associate's degree (83.8%) as the primary terminal degree, with the remaining schools reporting a bachelor's degree (16.3%). The median number of students in the entering class was 22 (IQR, 16–32). Just over one third of programs (35.6%) have faculty member(s) with specific expertise in tobacco cessation, and 66.1% of respondents reported personally teaching courses that have tobacco-related content.

Tobacco Cessation Educational Content and Teaching Methods

The number of minutes dedicated to each of the 12 tobacco-related topics in required coursework were characterized by the median and IQR (Table 1). Overall, the median number of total minutes dedicated to tobacco content in required coursework for

respiratory care students was 165 min (IQR, 88–283; median, 150 min for Associate degree programs and 205 min for Bachelors degree programs). The most commonly reported educational methods for tobacco cessation education were class lectures (89.7%) and required reading materials (55.4%). Fewer reported using case study discussion (38.6%), counseling *without* formal evaluation (13.3%), and counseling *with* formal evaluation (5.6%).

Perceived Importance and Adequacy of Coverage of Tobacco-Related Topics

The three topics perceived to be most important were (a) pathophysiology of tobacco-related disease, (b) assisting patients with quitting, and (c) aids for quitting, with more than 81% of respondents rating these as very or extremely important (Figure 1). The topics believed to be mostly adequately covered (Table 1) were pathophysiology of tobacco-related disease (78.0%) and aids for quitting (59.2%).

Perceived Barriers to Enhancement of Tobacco Cessation Education

Lack of available curriculum time was the leading perceived barrier to enhancing tobacco cessation coverage in the curriculum, with 33.1% and 34.3% indicating that it was very or extremely

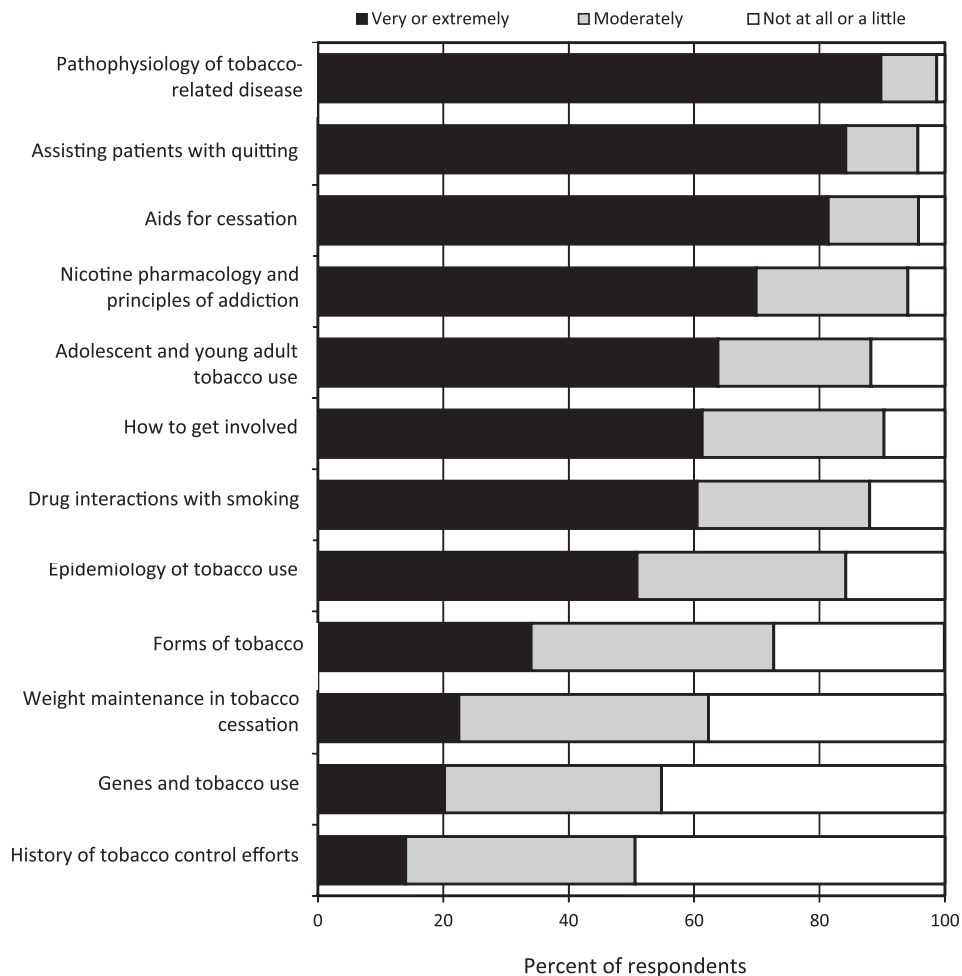


Figure 1. Perceived importance of 12 tobacco-related topics as part of required coursework for respiratory care students (n = 244).

important, respectively. Other barriers, and the percentage of respondents who reported the barrier as very or extremely important, included lack of faculty expertise (37.1%), lack of access to comprehensive, evidence-based teaching resources (32.6%), lack of financial resources (28.5%), lack of faculty's perceived importance of tobacco-related issues as applicable to respiratory therapy practice (19.8%), and lack of faculty interest in tobacco-related issues (15.7%). Most respondents were interested in participating in a nationwide effort to enhance tobacco cessation training for respiratory therapy students (36.4%, definitely yes; 36.4%, probably yes; 20.7%, unsure; 5.0% probably not; and 1.7% definitely not).

DISCUSSION

Because tobacco use is a key risk factor for pulmonary-induced diseases (USDHHS, 2014), comprehensive tobacco cessation education should be an integral component of training for all respiratory therapists. This study characterized levels of tobacco education in respiratory care programs across the United States. Despite the high importance and general consensus of perceived importance of tobacco education from respiratory care program directors, students receive a median of only 165 min of tobacco-related education in their required coursework, and a substantial proportion of respondents perceived deficiencies in the extent of tobacco cessation training that they provide. Furthermore, there is a “disconnect” between the content that is deemed important and the content that receives time allocation in the curriculum. For example, 84% of respondents rated the “assisting patients with quitting” topic as very/extremely important, but only 53% perceived it to be adequately covered (median, 15 min allocated). Similarly, 81% rated the “aids for cessation” topic as very/extremely important, but only 59% perceived it to be adequately covered (median, 20 min allocated). Most of the existing tobacco content focuses on basic science aspects of tobacco use (e.g., pathophysiology of tobacco-related disease; median, 45 min) as opposed to intervention-related skills (e.g., cessation counseling; median, 20 min). Surprisingly, nearly one in five respondents perceived a lack of faculty's perceived importance of tobacco-related issues as applicable to a respiratory care therapist's practice and only 35.6% of programs had a faculty member with specific expertise in tobacco use and cessation.

Similar to other disciplines, the level of tobacco content in respiratory therapy programs was perceived in this, and a previously published study (Jordan, Khubchandani, Wiblehauser, Glassman, & Thompson, 2011), to be inadequate. In a survey conducted by Jordan et al., it was determined that tobacco-related education was a “minor part” of respiratory therapy post-secondary education and 47% failed to provide any teaching for comprehensive counseling (Jordan et al., 2011). Notably, a median of 6 hr (360 min) has been suggested as a minimum for mastery of concepts in pharmacy schools (McBane et al., 2013). Although AARC recommends that RTs be able to understand tobacco addiction, evaluate tobacco use, assess patients' readiness to change, and treat tobacco addiction (AARC, 2014), there is no requirement—per the 2010 Accreditation Standard for the Profession of Respiratory Care (CoARC, 2010)—to address tobacco use in respiratory therapy training, and therefore competencies and standards do not dictate a need for inclusion of tobacco cessation as part of the core curricula.

In the survey study by Jordan et al. (2011), respondents were asked to identify types of instructional methods and materials

that would be most helpful if their program wanted to enhance its tobacco education component. Most (75%) indicated a “pre-packaged curriculum,” 70% indicated a DVD-based curriculum that shows encounters with actual patients, 66% indicated website and internet-based educational resources, and 59% indicated specific educational print materials for students. These specifications are aligned with the *Rx for Change: Clinician-Assisted Tobacco Cessation* curriculum, which was developed and disseminated between 2003 and 2005 via NIH-supported train-the-trainer programs to 191 faculty members representing 98% of the U.S. schools of pharmacy (Corelli, Fenlon, Kroon, Prokhorov, & Hudmon, 2007).

This study is limited in that data are not available to characterize the programs represented by nonresponders, and follow-up studies are needed to assess changes as a result of recent efforts to expand the role of RTs in tobacco cessation and control. Additionally, our survey did not characterize the positioning of the content within the overall curriculum. Because of the negative impact of smoking on pulmonary health (USDHHS, 2004), and because cessation training has a proven, positive effect on respiratory therapists' counseling behavior (Cohn et al., 2000; Gordon & Mahabee-Gittens, 2011; Gordon et al., 2013; Stevens, Glasgow, Hollis, & Mount, 2000), it is advisable that programs incorporate comprehensive tobacco cessation training into the core curriculum. Because nearly three quarters of this study population indicated interest in participating in a nationwide effort to enhance tobacco cessation training for respiratory care students, it is recommended that the profession delineate standards and strategies to move the respiratory care profession forward with this important mission.

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DECLARATION OF INTERESTS

None declared.

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