abstract

OBJECTIVE: To assess the current status of pediatric residency training on tobacco use and smoke exposure.

METHODS: A nationwide survey of all pediatric residency training directors in the United States was conducted from November 2010 to May 2011 via use of surveymonkey.com. The survey assessed training director characteristics, attitudes and beliefs about pediatricians’ role in addressing tobacco control in patients and parents, past training in tobacco use and smoke exposure, inclusion of tobacco control in their training curriculum, and barriers to inclusion. Data are presented as percentages, with $\chi^2$ tests of significance.

RESULTS: Sixty-five percent of programs included tobacco control in the curriculum, and training directors who received past training in tobacco prevention and control were significantly more likely to include tobacco use and smoke exposure than those without training. The vast majority of training programs focused on health effects as opposed to intervention, failed to employ active learning to teach tobacco intervention skills, did not evaluate resident tobacco knowledge and skills, and did not encourage use of medications to help parents quit smoking.

CONCLUSIONS: Pediatric residency training programs must do more to prepare residents to address tobacco use and smoke exposure. Given the many competing priorities of residency training, there is a need to explore new ways of integrating tobacco control into the 3-year curriculum. 

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KEY WORDS: pediatric residency training, residency training directors, training curriculum, tobacco use, exposure to tobacco smoke

ABBREVIATION: df—degree of freedom

According to the criteria listed in the author’s guidelines, Drs Hymowitz and Schwab qualify to be listed as contributors. They each participated in all phases of the research endeavor, including conception and design, survey development, acquisition of data, data analysis and interpretation, preparation of the article for publication, and final approval of the submission.

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Cigarette smoking, other forms of tobacco use, and exposure to tobacco smoke lay at the heart of the current worldwide pandemic of tobacco-related disease.1–3 The genesis of this pandemic starts early in life.5–5 Most adult smokers started smoking at a young age, fetuses are endangered by mothers who smoke, and infants, children, and adolescents are exposed to tobacco smoke in their homes and elsewhere.2,6 Because of this, cigarette smoking has been called a “pediatric disease,”7,8 and the American Academy of Pediatrics has called upon pediatricians to address tobacco use and smoke exposure in patients and parents.8,9 To do so, however, requires proper preparation and training.

A 2001 survey of pediatric residency training directors revealed that >90% believed that pediatricians have an important role to play in the antismoking arena.10 However, only ~50% included tobacco use or smoke exposure in their curriculum. Of those that did, most focused on health effects as opposed to clinical intervention, did not use active learning to teach tobacco intervention skills, and were reluctant to encourage residents to use stop smoking medications when addressing smoking cessation with parents.10 These findings are particularly unfortunate because training enhances pediatricians’ self-efficacy for,11 and likelihood of,12,13 addressing tobacco prevention and control. The importance of addressing tobacco use and smoke exposure in parents cannot be underestimated.14,15 In addition, demonstration projects support the value of training pediatric residents to intervene on prevention of tobacco use, smoking cessation, and tobacco smoke exposure.16,17 In view of the fact that residency training may contribute to inculcating intervention on tobacco use and smoke exposure into routine practice patterns, we conducted a second nationwide survey of all pediatric residency training directors in the United States to determine the current status of residency training on tobacco use and/or smoke exposure, to learn about factors that influence whether pediatric training programs address tobacco control, and to gain insight into progress since 2001. In this report, we focus on the current status of pediatric residency training on tobacco use and smoke exposure and what needs to be done to enhance the preparation of pediatric residents to play a leadership role in protecting patients from the scourge of tobacco use and smoke exposure.

METHODS

The institutional review board-approved survey included the following topics: demographic characteristics, smoking status and history, past training in tobacco control curriculum, barriers to training, and attitudes and beliefs about pediatricians’ role in tobacco prevention and control. The survey was reviewed and approved by the Association of Pediatric Program Directors Research and Scholarship Task Force. It largely consisted of “yes” and “no” and 5-point Likert Scale (1, very much disagree; 2, disagree; 3, no opinion; 4, agree; and 5, very much agree) questions. For the purpose of statistical analyses, the “very much disagree” and “disagree” categories were combined, as were the “very much agree” and “agree” categories. All program directors in the United States (n = 198) were contacted by e-mail and provided with a “cover letter” and an anonymous link (neither personal identifiers and names nor locations of the training program were identified) to complete the Web-based survey at surveymonkey.com. Four waves of e-mails were sent out in November, December (2010), and March and May (2011). Data were downloaded from surveymonkey.com for analysis and are presented as means and percentages, with χ2 tests of significance.

RESULTS

Ninety-four training directors responded to the survey (47% response rate). Eighty-nine percent were white, 50% were women, and their average age was 48 years. None of the respondents used tobacco, and 50% reported receiving training in tobacco use and/or tobacco smoke exposure in the past (not queried in the 2001 survey). The demographic characteristics of the training directors who responded to the 2010/2011 survey are strikingly similar to those who responded to the 2001 survey,10 although the 2010/2011 survey included a significantly greater percentage of women (50% vs 30%; χ2 = 8.42, degree of freedom [df] = 1, P < .05).

Of the training directors who reported receiving training in tobacco control in the past, the percentage who reported receiving training in medical school, residency, and postresidency was 43%, 53%, and 64%, respectively (categories not mutually exclusive). Among those who received training, 98% reported receiving information about the health effects of tobacco use and smoke exposure. Significantly fewer reported receiving training in behavioral management of tobacco smoke exposure (56%; χ2 = 37.73, df = 1, P < .0001), behavioral (64%; χ2 = 15.46, df = 1, P < .0001) and pharmacological (57%; χ2 = 19.87, df = 1, P < .0001) management of cigarette smoking, and prevention of smoking onset (70%; χ2 = 11.42, df = 1, P = .0007).

Sixty-five percent of the respondents reported that their current training program provides teaching, training, and/or supervision in tobacco use and smoke exposure (Table 1). This is a significantly greater percentage than was reported in the 2001 survey (50%; χ2 = 4.98, df = 1, P = .015). Of the training
TABLE 1 Tobacco Curriculum Content Among Programs That Include Tobacco in Their Resident Training Curricula (N = 61)

<table>
<thead>
<tr>
<th>Curriculum</th>
<th>Number “Yes”</th>
<th>Percent “Yes”</th>
<th>$\chi^2$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health effects of tobacco smoke</td>
<td>54</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral management of tobacco</td>
<td>37</td>
<td>61</td>
<td>11.07</td>
<td>.0009</td>
</tr>
<tr>
<td>Health effects of cigarette smoking</td>
<td>56</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral management of cigarette smoking: patients</td>
<td>30</td>
<td>49</td>
<td>24.63</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Behavioral management of cigarette smoking: parents</td>
<td>40</td>
<td>66</td>
<td>11.00</td>
<td>.0009</td>
</tr>
<tr>
<td>Pharmacological management of cigarette smoking: patients</td>
<td>28</td>
<td>49</td>
<td>27.86</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Pharmacological management of cigarette smoking: parents</td>
<td>22</td>
<td>36</td>
<td>38.71</td>
<td>&lt;.0001</td>
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<tr>
<td>Prevention of cigarette smoking</td>
<td>54</td>
<td>89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health effects of other forms of tobacco</td>
<td>42</td>
<td>69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral management of other forms of tobacco</td>
<td>20</td>
<td>33</td>
<td>14.46</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

NS, not significant.

* Denominator for calculating percent of respondents who included specific tobacco content in their resident training curricula.

b Behavioral/intervention content versus corresponding health effects content.

directors in 2010/2011 who reported receiving training on tobacco control in the past (n = 47), 79% included tobacco control in their curriculum. This percentage is significantly greater than the percentage for those who did not report receiving training in the past (57%; $\chi^2 = 3.84; df = 1, P = .05$). Among those who received training during their residency, 92% (n = 25) included coverage of tobacco use and/or smoke exposure.

As shown in Table 1, the curricula focused significantly more on health effects of smoking and tobacco smoke exposure than on how to intervene (Table 1). Training directors who reported receiving past training on tobacco use and/or smoke exposure were more likely to address intervention (behavioral management of smoking, pharmacological management of smoking, and/or the behavioral aspects of tobacco use and smoke exposure) than those without former training (68% vs 36%; $\chi^2 = 8.07; df = 1, P = .0045$). Coverage of prevention in the curriculum was not included in the analysis because the question did not distinguish whether material on prevention focused more on health benefits of preventing smoking onset or on behavioral aspects of prevention (e.g., risk factors for smoking initiation, resistance skill training, assessing behavioral intentions, etc).

Seventy-five percent of programs that addressed tobacco use and/or smoke exposure devoted 2 to 6 hours to the topic during the 3-year residency. The most prevalent approaches to training were lectures/grand rounds, reading materials, discussion groups, and clinical supervision, with the latter typically provided on an informal basis (Table 2). Active learning, so valuable for teaching clinical skills, was rarely employed, and only 7 training directors reported conducting formal evaluation of resident knowledge about tobacco use, smoke exposure, or intervention skills. The most popular training venue, formally or informally, was Continuity Clinic (90% of the training programs addressed tobacco; data not shown).

Major barriers to including tobacco prevention and control in the curriculum were lack of expertise among faculty (44%), lack of resources (40%), and competing requirements of the residency review committee (70%), the 3 most prevalent barriers reported in the 2001 survey. The 5-point Likert scales revealed that 98% of the training directors endorsed the statement concerning the important role that pediatricians may play in the anti-smoking arena. 94% agreed that pediatricians have an important role to play in helping parents who smoke to quit, and 100% felt that pediatricians have an important role to play in encouraging parents to protect their children from tobacco smoke exposure. Despite this, few believed that it was appropriate for pediatricians to prescribe medications or arrange follow-up to help parents quit smoking (14% and 30%, respectively). Eighty percent agreed that it was appropriate for pediatricians to provide support for cessation and prevention in young people, whereas only 59% agreed that it was appropriate for pediatricians to arrange follow-up for parents seeking to protect their children from tobacco smoke exposure.

**DISCUSSION**

The findings from the 2010/2011 Pediatric Resident Training Tobacco Survey reveal that virtually all respondents believed that pediatricians have an important role to play in addressing tobacco use and smoke exposure.
Despite this, only 65% of the training directors reported that their program included coverage of tobacco prevention, cessation, and/or tobacco smoke exposure in the residency training curriculum. In addition, the nature of the coverage calls into question whether pediatric residents are being adequately prepared to protect their patients from the harm of cigarette smoking and smoke exposure.

The vast majority of training directors reported that their curriculum focused on health effects of tobacco use and smoke exposure as opposed to “how to” intervene with patients and parents, failed to employ active learning to teach tobacco intervention skills, and did not include evaluation of resident tobacco control knowledge or skills. As in the case of the 2001 survey, they listed lack of expertise among the faculty, lack of resources, and competing priorities of the residency review committee as key barriers to including tobacco control in the curriculum.

The survey also revealed that most program directors did not agree with prescribing medication and/or providing follow-up support to help parents quit smoking, and only slightly more than half of the respondents supported follow-up of parents to help protect children from smoke exposure. To the extent that program director beliefs and attitudes influence choice and nature of curriculum content, these findings are quite troubling. Parental tobacco use is an important determinant of children’s use of cigarettes and exposure to tobacco smoke, and recent reviews highlight the importance and efficacy of addressing tobacco use and tobacco smoke exposure in parents.

It is noteworthy that previous training on tobacco control in medical school, residency, and/or beyond was a significant determinant of which program directors included tobacco use and smoke exposure in their curriculum. More than 90% of respondents who received training in tobacco control during their pediatric residency included tobacco use and/or tobacco smoke exposure in their curriculum. These findings underscore the importance of previous training on tobacco prevention and control, particularly during residency training, and they provide a rationale for encouraging current training directors and those who aspire to that position to take advantage of continuing medical education programs on tobacco use and smoke exposure.

The 2010/2011 survey, like the survey conducted in 2001, underscores the need for pediatric residency training programs to do more to prepare residents to address tobacco use and smoke exposure with more emphasis on how to intervene with patients and parents and greater use of active learning to teach those skills. These findings have important implications for residency review committee policy and curriculum development. As was the case in 2001, the 2010/2011 survey underscores the need for more training resources and ways to enhance the expertise and clinical skills of faculty and attending physicians for intervention on tobacco use and smoke exposure. The provision of comprehensive continuing medical education offerings on-line or in person, particularly those that include a comprehensive how-to component, should be encouraged for faculty as well as training directors.

In view of the many competing priorities that training directors must address, it may be necessary to explore new ways of integrating coverage of tobacco use and smoke exposure over time into the 3-year curriculum. This may be accomplished by (1) imbedding material on the health effects of tobacco use and smoke exposure within discussions of risk factors and illnesses linked to tobacco, such as otitis media and asthma; (2) making better use of active learning to emphasize that the same behavioral strategies (eg, motivational interviewing, role-playing, and diverse behavioral techniques) that are applicable to intervention on other behaviors that pediatricians routinely address (eg, diet, accident prevention, and adherence to therapeutic regimens) also are applicable to the management of tobacco use and smoke exposure; and (3) by providing clinical supervision of tobacco interventions in settings such as Continuity Clinic, asthma and pediatric cardiology clinics, inpatient, emergency department, and community-based rotations throughout the 3-year training program.

The 47% response rate to the current e-mail survey, although consistent with other e-mail surveys of pediatric residency training directors, may raise questions about the generality of the findings. It is noteworthy that most of the 2010/2011 findings are similar to those of the 2001 survey, which had a 70% response rate. Very likely, respondents were more likely to address tobacco use and smoke exposure than nonrespondents, suggesting that the data presented here, as well as in 2001, represent a conservative estimate of the status of pediatric resident training on tobacco prevention and control. A difference in the pattern of responses in e-mailing waves 1 and 4 supports this possibility. A greater percent of respondents to wave 1 than to wave 4 reported that they received past training on tobacco prevention and control, included tobacco use and smoke exposure in their curriculum, used active learning, and evaluated resident tobacco knowledge and skills.

The lower response rate obtained in the 2010/2011 survey (70%) also may be cause for caution in interpreting the reported significant increase in the percent of residency training programs that
included tobacco control in their curriculum during the past decade. Given that respondents are more likely to include tobacco use and/or smoke exposure in the curriculum than non-respondents, it is possible that the lower response to the 2010/2011 survey contained relatively fewer respondents who did not include tobacco control in the curriculum than the 2001 survey, which had a greater response rate. To the extent that this differential occurred, it would bias the comparison between the percent of training programs that included tobacco use and/or smoke exposure in the curriculum in 2001 and 2010/2011 in favor of the more recent survey.

CONCLUSIONS

Tobacco use and smoke exposure remain serious threats to the health of children around the globe, and pediatricians have an important role to play in the antismoking arena. Although our findings indicate that there may have been a significant increase during the past decade in the percent of programs that included tobacco control in their curriculum, it is still clear that pediatric residency training programs must do more to prepare residents to address tobacco use and smoke exposure. In particular, training programs must go beyond coverage of health effects of tobacco use and smoke exposure to include more emphasis on how to intervene to prevent tobacco use onset, help parents and patients who smoke or use other forms of tobacco to quit, and partner with parents to protect youth from exposure to harmful tobacco smoke.

REFERENCES


Pediatric Residency Training Director Tobacco Survey II
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/content/130/4/712.full.html