



ARTICLE 1

C O V E R S T O R Y

Oral Pharyngeal Cancer Prevention and Early Detection

Dentists' Opinions and Practices

ALICE M. HOROWITZ, PH.D.; THOMAS F. DRURY, PH.D.; HAROLD S. GOODMAN, D.M.D., M.P.H.; JANET A. YELLOWITZ, D.M.D., M.P.H.

Today, oral pharyngeal cancers are responsible for 2 to 3 percent of all cancer deaths in the United States.¹⁻³ These malignancies are among the most debilitating and disfiguring of all cancers and remain the sixth most common type among U.S. white males and the fourth most common among African-American males. Oral pharyngeal cancers include those of the lips, tongue, pharynx and oral cavity. Nearly 30,000 new cases and more than 8,000 deaths occur annually.¹⁻³ Overall, the five-year survival rate is only 52 percent and has changed little in recent decades.¹⁻³ This survival rate suggests that oral cancers are detected at late stages. Blacks are more likely to be diagnosed at advanced stages than are whites.⁴

About one-half of all oral pharyngeal cancers and the majority of deaths related to oral pharyngeal cancer occur in people 65 years of age or older.⁴ Typically, oral pharyngeal cancers take several years to progress to advanced stages. Because most oral cancers are amenable to early treatment and the mouth is readily accessible,⁵ it is imperative that oral cancer examinations be conducted regularly for early diagnosis, especially for people in their 40s and 50s and those who are at high risk.

The primary risk factors for developing oral cancers in the United States include use of tobacco and alcohol, as well as exposure to the sun for lip cancer.^{2,3} Although tobacco is considered the primary culprit, both tobacco and alcohol products independently increase the risk of oral pharyngeal cancer, and people who use both are at much higher risk than are those who only smoke or drink.⁵ Other risk factors include not consuming fruits and vegetables⁶ and not using

ABSTRACT

Background. The five-year survival rate for patients in the United States diagnosed with oral pharyngeal cancer is 52 percent, which suggests that these cancers are diagnosed at late stages. The authors conducted this study to determine U.S. dentists' opinions and practices regarding oral cancer prevention and early detection.

Methods. The authors mailed a pretested survey to 7,000 randomly selected general practitioners. A total of 3,200 dentists provided information on how they conduct oral cancer examinations, their use of health history questions to assess patients' oral cancer risks and their oral cancer training and practices. The authors carried out analyses using unweighted data; both bivariate and logistic analytical techniques at a $P \leq .01$ level of significance were used.

Results. On average, dentists assessed about five of the eight health history items on the survey. Eighty-six percent indicated that they did not conduct oral cancer examinations on edentulous patients 18 years of age or older; 81 percent, however, reported that they conducted oral cancer examinations for 100 percent of their patients 40 years of age or older on their initial appointment.

Conclusions. The reported practices of these dentists regarding oral cancer, in conjunction with their opinions about key aspects of these practices and their training, point to a need for systematic educational updates in oral cancer prevention and early detection.

Clinical Implications. Dentists need to determine their patients' risks for oral cancers and provide routine and comprehensive oral cancer examinations.

methods of sun protection such as lip sunscreen and hats. More recent evidence also has implicated human papilloma viruses.^{7,8}

Results of three studies show that U.S. adults are ill-informed with regard to risk factors for, and signs and symptoms of, oral cancers.⁹⁻¹¹ The principal method of detection for these neoplasms is a comprehensive oral cancer examination, which the American Cancer Society¹² recommends annually for people 40 years of age or older. Yet, a 1992 national survey showed that only 14 percent of U.S. adults reported ever having an oral cancer examination.¹⁰ Of these, only 7 percent who were 40 years of age or older had the examination during the past year.

A patient's risk for oral cancer is vital information that all health care providers should obtain. Determining whether a patient uses or has ever used tobacco is pivotal information for determining the patient's risk for oral cancer and other diseases. Failure to do so reduces the practitioner's "index of suspicion," and the patient is less likely to be diagnosed early.¹³ Further, such information is required to determine if the patient should be provided with or referred for tobacco cessation counseling. Yet, results of a recent study indicate that nearly one-third of U.S. dental schools' health history forms do not contain questions to determine risk factors for oral cancers.¹⁴ Other studies have reported that most dentists tend not to determine their patients' risk factors for oral cancers, and most do not provide tobacco cessation counseling.^{15,16}

TABLE 1

SELECTED CHARACTERISTICS OF GENERAL PRACTICE DENTISTS (N = 3,200).	
BACKGROUND CHARACTERISTICS	PERCENTAGE*
Sex	
Male	86
Female	14
Time of Graduation	
Before 1970	22
1970 to 1979	28
1980 to 1989	33
1990 to 1995	17
Type of Practice	
Solo	68
Partnership	12
Employee/Contractor	14
Other	6
Interval Since Last Oral Cancer Continuing Education Course	
Within the Past 12 Months	13
One to Four Years	42
Five or More Years	26
Never Taken a Course	18

* Some groups of percentages do not equal 100 due to rounding.

Healthy People 2010—the United States health objectives—have as one of their objectives to reduce mortality from oral pharyngeal cancers.¹⁷ To reduce morbidity and mortality from these cancers, patients must reduce tobacco and alcohol use, the malignancies need to be detected at an early stage, and follow-up treatment needs to be ensured. Dentists are professionally responsible for determining whether patients are at risk of developing oral cancer, as well as for providing a comprehensive oral cancer examination for their patients.^{18,19}

STUDY OBJECTIVES

We conducted this study to determine the opinions and practices regarding oral pharyngeal cancer prevention and early detection among U.S. dentists in general practice. To accomplish this, we developed the National Oral Cancer Survey of Dentists, or NOCSD, to provide comprehensive and up-to-date information about what general practice dentists were actually doing on this front in regards to their knowledge of oral pharyngeal cancer and their opinions about key aspects of oral pharyngeal cancer practices. Our intent was to obtain

information to clarify the need for continuing education courses on oral pharyngeal cancer and identify particular areas of knowledge and practice that such courses should address.

Opinions. We studied dentists' opinions with respect to the overall quality of their dental education in preparing them to perform oral cancer examinations, the relative emphasis given by their schools to the oral cancer examination, the adequacy of their training with respect to conducting an oral cancer examination in general and palpating a patient's lymph nodes in particular, as well as the adequacy of their training for providing tobacco and alcohol cessation counseling for patients.

Practices. Two major aspects of dentists' oral cancer practices that we specifically studied were the extent to which they probed for oral pharyngeal cancer risk factors when taking a patient's medical history and the extent to which they provided an oral cancer examination for stipulated groups of patients.

SUBJECTS AND METHODS

We purchased a list of 7,000 randomly selected general practitioners (ADA and non-ADA members) in the United States from the ADA. We mailed a pretested, 34-item questionnaire; cover letter; and self-addressed, stamped return envelope to each of these dentists in July 1995 and asked them to return the questionnaires within two weeks.

At three weeks, we mailed a reminder postcard to all 7,000 dentists; six weeks after the initial mailing, we mailed a second

Oral Cancer Risk Factors Probed in Medical History					
When taking a medical history, which of the following do you assess? (CIRCLE ONE ON EACH LINE)					
	YES		NO		
Patient's past alcohol use?	①		②		
Patient's present alcohol use?	①		②		
Type and amount of alcohol used?	①		②		
Patient's previous tobacco use?	①		②		
Patient's present tobacco use?	①		②		
Type and amount of tobacco?	①		②		
Patient's history of cancer?	①		②		
Family history of cancer?	①		②		
Compliance with Recommended Oral Cancer Examination Practices					
Please provide your best estimate of the percentage of patients age groups for whom you provide an oral cancer examination at their INITIAL (emergency or scheduled) and RECALL appointments. If you do not provide oral cancer exams write "0".					
Age	Initial Appointment		Recall Appointment		
40+	____ Percent		____ Percent		
Please provide your best estimate of the percentage of your edentulous patients for whom you provide an oral cancer examination.					
____ Percent of edentulous patients.					
Please provide your best estimate of the percentage of your adult patients (18 years and older) for whom you routinely feel their necks to palpate their lymph nodes. If none, write "0".					
____ Percent of adult patients					
Opinions about Oral Cancer Education and Training					
Please indicate the extent to which you personally agree or disagree with each of the following statements (CIRCLE ONE RESPONSE ON EACH LINE)					
	Strongly Agree	Agree	Disagree	Strongly Agree	Don't Know
	SA	A	D	SD	DK
I am adequately trained to examine patients for oral cancer	SA	A	D	SD	DK
I am adequately trained to palpate lymph nodes in patients' necks	SA	A	D	SD	DK
I am adequately trained to provide tobacco cessation education	SA	A	D	SD	DK
I am adequately trained to provide alcohol cessation education	SA	A	D	SD	DK
In your opinion, did your dental school treat oral cancer exams similar to other procedures in terms of numerical requirements and the receipt of credit? (CHECK ONLY ONE)					
<input type="checkbox"/> 1. Yes					
<input type="checkbox"/> 2. No					
<input type="checkbox"/> 3. Not sure/ don't recall					
How would you rate your undergraduate training regarding oral cancer examinations? (CHECK ONLY ONE)					
<input type="checkbox"/> 1. Very good					
<input type="checkbox"/> 2. Good					
<input type="checkbox"/> 3. Poor					
<input type="checkbox"/> 4. Very poor					
<input type="checkbox"/> 5. Not sure					

Figure 1. Portion of the study questionnaire regarding dentists' oral pharyngeal cancer practices and education and training.

complete mailing to all nonrespondents.

We received 3,200 usable questionnaires, which represented a response rate of 50 percent of the 6,400 sampled dentists who were eligible for the survey. We also received 600 questionnaires from ineligible dentists.

In evaluating potential bias due to the low response rate, we were not able to determine the background characteristics of the nonrespondents in this study. However, the study group was comparable with the ADA's statistical mix of sex,

year of graduation and practice composition of U.S. general practice dentists.

Moreover, we conducted a pilot survey to prepare for the national survey, and we obtained demographic data on a random 10 percent sample of the nonrespondents. We found no differences between their backgrounds and those of respondents to the pilot survey.¹³

Of the 3,200-dentist study sample, 86 percent of the respondents were men (Table 1). Sixty-eight percent were owners of a solo practice, while 12 and

TABLE 2

CLASSIFICATION OF GENERAL PRACTICE DENTISTS.				
INDEX OF ORAL CANCER EXAMINATIONS PROVIDED	INDEX OF ORAL CANCER RISK FACTORS PROBED IN MEDICAL HISTORIES			ALL DENTISTS
	Low (0-3 Items)	Medium (4-6 Items)	High (7-8 Items)	
Percentage of All Dentists				
Low (0-1 Examination)	7.1	9.8	7.5	24.3
Medium (2 Examinations)	11.3	18.9	12.8	42.9
High (3-4 Examinations)	4.6	13.2	15.0	32.8
ALL DENTISTS	22.9	41.8	35.2	100.0

14 percent, respectively, practiced in partnerships or were employees/contractors. Fifty percent of the respondents were graduated from 1980 to 1995.

From the survey sample, we analyzed the dentists' responses to questions regarding their probing for eight specific risk factors when taking medical histories, as well as their responses to four questions about the provision of oral cancer examinations and selected opinions regarding their oral pharyngeal cancer education and training (Figure 1). We used the responses to the eight health history questions to develop a rating score, or index, of the comprehensiveness of oral cancer risk factors probed in medical histories. We based this index on the number of risk factors probed, with each factor probed receiving a score of 1. Based on this index, which reflects the number of risk factors probed, we classified the dentists into one of three approximately equal categories of screening comprehensiveness: low (0-3 items), medium (4-6 items) or high (7-8 items).

We also used the four ques-

tions about the provision of oral cancer examinations to develop two additional indexes of compliance with recommended practices: one for identifying the number of different examinations that dentists provided for 100 percent of their

We used the responses to the eight health history questions to develop a rating score, or index, of the comprehensiveness of oral cancer risk factors probed in medical histories.

patients, and another for identifying the number of different examinations that dentists provided for 80 percent or more of their patients. On the former index, dentists received scores of 1 for each examination that they reported providing to 100 percent of their patients. On the later index, dentists received scores of 1 for each examination

that they reported providing to 80 percent or more of their patients.

On each of these indexes, we classified dentists into one of three approximately equal categories of practice compliance—low (0-1 examination), medium (2 examinations) or high (3-4 examinations)—depending on the number of oral cancer examinations (including examinations in which a patient's lymph node was palpated) that a dentist provided for 100 percent and for 80 percent or more of their stipulated patients. No dentist received a perfect score of 4—a score of 1 for each of the four examinations—on the index based on the 100 percent criterion. Therefore, we used the index based on the 80 percent criterion in conjunction with the index of comprehensiveness of risk factors probed in medical histories to develop a typology of general practice dentists based on their combined classification on these indexes.

To measure their opinions, we provided dentists with five precoded response categories: “strongly agree,” “agree,” “dis-

agree,” “strongly disagree” and an off-scale response category “don’t know.” For purposes of this study, we collapsed strongly agree and agree responses to identify any agreement with an item.

We carried out analyses using unweighted data. We determined the extent to which dentists probed for certain oral pharyngeal cancer risk factors in taking a patient’s medical history, as well as the extent to which they provided oral cancer examinations for all or at least 80 percent of stipulated types of patients. Both individual items and overall levels of effort for each of these aspects of oral pharyngeal cancer practices were considered. Then we made an examination of the relationship between dentists’ efforts in risk screening and in conducting oral cancer examinations on patients. The analyses then focused on associations between selected background characteristics and three aspects of oral cancer practices: the likelihood of getting a high score on the index of comprehensive screening for oral pharyngeal cancer risk factors, the likelihood of getting a high score on the index of compliance with recommended oral pharyngeal cancer examination practices and the likelihood of getting a high score on both of these indexes.

Consideration of dentists’ opinions about the quality of their dental education with respect to oral pharyngeal cancer and the adequacy of their oral pharyngeal cancer training rounded out the analyses. We employed both bivariate and logistic analytical techniques using the statistical software packages Statis-

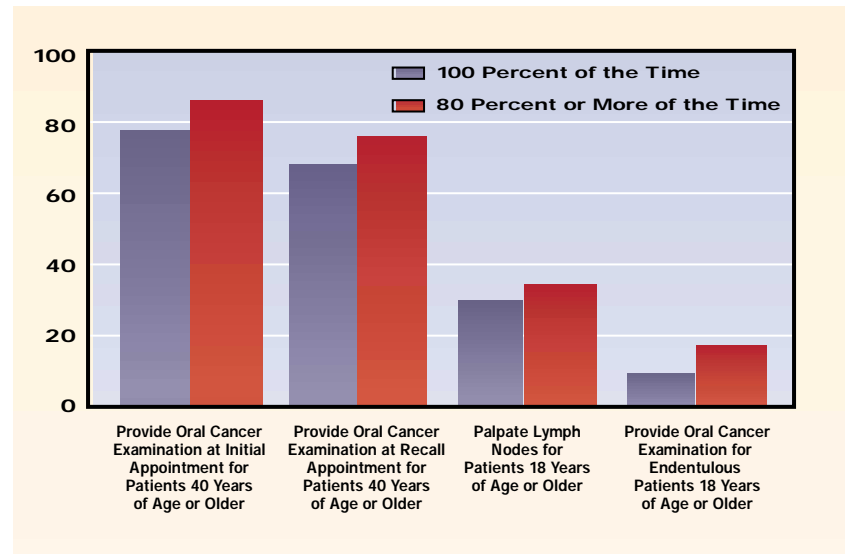


Figure 2. Percentage of general practice dentists providing recommended oral cancer examinations.

tical Analysis System (Version 6, SAS Institute) and SUDAAN (Release 7.0, Research Triangle Institute). A $P \leq .01$ level of significance was used in evaluating all statistical results.

Approximately 81 percent of dentists said that they provided an oral cancer examination for 100 percent of their patients 40 years of age or older at their initial appointment.

RESULTS

Screening patients for oral pharyngeal cancer risk factors. For the eight health history items, 91 percent of dentists asked about their patients’ cancer history, and 90 percent asked about present tobacco use. Seventy-seven percent

asked about past tobacco use, and 72 percent asked about types and amounts of tobacco products used. Sixty-five percent asked about the patient’s family history of cancer, and 60 percent asked about present alcohol use. A total of 50 percent asked about past alcohol use, and 33 percent asked about types and amounts of alcohol used. On average, dentists assessed about five of the eight health history factors. A majority (64 percent) assessed five or more items of the oral cancer health history index. A substantial minority of dentists (31 percent) assessed only one to four of these eight items.

Provision of oral cancer examinations. With regard to the conduct of oral cancer examinations, about 86 percent indicated that they did not provide an oral cancer examination for edentulous patients 18 years of age or older (Figure 2). Approximately 81 percent said that they provided an oral cancer examination for 100 percent of their patients 40 years of age or older at their initial appoint-

TABLE 3

ASSOCIATIONS BETWEEN BACKGROUND CHARACTERISTICS AND HIGH SCORES ON INDEXES.

BACKGROUND CHARACTERISTICS	HIGH SCORE ON INDEX OF HEALTH HISTORY PRACTICES		HIGH SCORE ON INDEX OF COMPLIANCE WITH ORAL CANCER EXAMINATION PRACTICES		HIGH SCORE ON HEALTH HISTORY AND COMPLIANCE INDEXES	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Sex						
Male	1.0	1.0	1.0	1.0	1.0	1.0
Female	1.6*	1.2	1.3	1.1	1.4†	1.0†
Time of Graduation						
Before 1970	1.0	1.0	1.0	1.0	1.0	1.0
1970 to 1979	1.1	1.1	1.1	1.1	1.5‡	1.6‡
1980 to 1989	1.5*	1.5†	1.5	1.5†	2.1*	2.4*
1990 to 1995	2.0*	2.0	1.3	1.4§	2.2*	2.5*
Type of Practice						
Solo	1.0	1.0	1.0	1.0	1.0	1.0
Partnership	0.9	0.9	0.9	0.9	0.9	0.9
Employee/Contractor	1.5‡	1.2	0.9	1.0	1.2	1.0
Other	1.6‡	1.7‡	0.9	1.0	1.3	1.4
Interval Since Last Oral Cancer Continuing Education Course						
Within the Past 12 Months	1.0	1.0	1.0	1.0	1.0	1.0
One to Four Years	0.8‡	0.8	1.0	1.0	0.8	0.8
Five or More Years	0.5*	0.6*	0.7	0.7†	0.4*	0.5*
Never Taken a Course	0.4*	0.4	0.5	0.5	0.3*	0.3*

* $P < .0001$.† $P < .001$.‡ $P < .01$.§ $P < .05$.

ment. Seventy-eight percent indicated that they provided this examination on their patients 40 years of age or older at recall appointments. Thirty-five percent indicated that they palpated lymph nodes of patients 18 years of age or older 80 percent or more of the time.

Patterns of oral pharyngeal cancer risk screening and oral examinations. To examine the relationships between dentists' efforts to screen patients for oral cancer risk factors and their efforts to provide patients with oral cancer examinations, we cross-

classified them by the three category indexes (low, medium and high) of their risk screening and examination efforts. Table 2 shows the percentage of all dentists by their joint distribution of these two characteristics (risk screening and examination). A total of 35 percent of

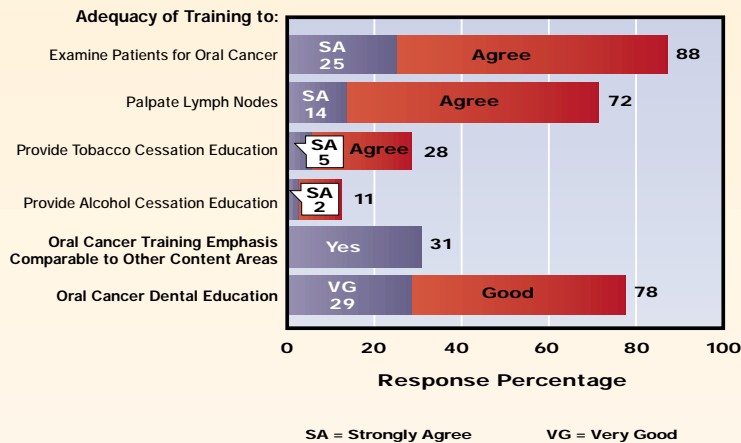


Figure 3. Opinions of general practice dentists regarding the adequacy of their oral pharyngeal cancer training and education.

dentists received a high score for their efforts in screening patients for oral cancer risks. Moreover, 33 percent received a high score for their efforts in providing patients with an oral cancer examination. Fifteen percent of all dentists received a high score for both practices.

Further analysis of the cross-classified data revealed that 41 percent received a consistent score for each of these oral cancer practices. Those receiving a consistent score were at least two times more likely to get a consistently medium (19 percent) or high (15 percent) score than they were to get a consistently low (7 percent) score. Conversely, about 60 percent of dentists received inconsistent scores for their efforts in screening and examining patients. Those with an inconsistent set of scores were equally likely to have done better with screening (30 percent) or to have done better with examining patients (29 percent). Our further analyses focused only on the likelihood of getting a high score on each index independently of the other, as well as in combination.

Background characteristics and oral pharyngeal cancer practices. To study the effects of background characteristics on these key aspects of oral cancer practices, we carried out a series of bivariate and multivariate logistic regression

A total of 35 percent of dentists received a high score for their efforts in screening patients for oral cancer risks.

analyses. We considered four background characteristics in relation to the likelihood of getting a high score for risk screening efforts, examination efforts and both combined. The four background characteristics were sex, time of graduation, type of practice and the interval since last oral pharyngeal cancer continuing education course. Male solo practitioners who were graduated before 1970 and who had taken a continuing education course in oral pharyngeal cancer within the

past 12 months were defined as the reference population cell(s).

We chose dentists with these characteristics to be the reference population to maximize the number of cases (and thereby the statistical stability) of the reference, as well as to facilitate the interpretation of estimated regression coefficients and odds ratios that were expressed as deviations from these references either singly or in combination. The results of the logistic analyses are displayed in Table 3. The major (and more consistent) findings are highlighted immediately following, but separately, for each type of high-effort score.

Likelihood of getting a high score for screening patients. Compared with the reference population, dentists who were graduated from 1980 to 1989 or 1990 to 1995 were 1.5 to 2.0 times, respectively, more likely to get a high score for their efforts in screening patients for oral pharyngeal cancer risk factors (Table 3). Dentists who had never taken an oral pharyngeal cancer continuing education course or who had not taken one within the past five years were 2.6 or 1.7 times, respectively, less likely to get a high score on this risk-screening index.

Likelihood of getting a high score for examining patients. Dentists who were graduated from 1980 to 1995 were 1.5 times more likely to score high on the index of compliance with recommended oral cancer examination practices, while dentists who were graduated from 1990 to 1995 were nearly 1.4 times more likely to get a high score (Table 3). Dentists who had never taken an oral pharyngeal cancer continuing education

course or had not taken one within the past five years were 2.2 and 1.5 times, respectively, less likely to get a high score on this practice compliance index.

Likelihood of getting a high score both for screening and for examining patients. Compared with the reference population, dentists who were graduated from 1980 to 1995 were about 2.5 times more likely to score high on both indexes (Table 3). Dentists in the other practice settings were 1.4 times more likely to score high on both indexes. Dentists who had never taken an oral cancer continuing education course or who had not taken one within the past five years were 5.0 or 2.2 times, respectively, less likely to score high on both indexes.

Dentists' opinions about their education in oral cancer. We asked respondents to rate their undergraduate training in oral cancer as either "very good," "good," "poor" or "very poor." Twenty-nine percent rated their education in oral cancer as very good, while 49 percent gave it a good rating (Figure 3). Twenty percent of dentists regarded their training as poor or very poor. When dentists were asked whether their dental school treated oral cancer examinations of patients similar to other procedures in terms of numerical requirements and receipt of credit, 54 percent reported that their dental school's treatment of oral cancer examinations was not similar to other procedures in this sense.

Eighty-eight percent of dentists agreed or strongly agreed that they were adequately trained to examine patients for oral cancer; 72 percent agreed or strongly agreed that they

were adequately trained to palpate lymph nodes. Only 25 percent, however, strongly agreed that they were adequately trained to provide oral cancer examinations, while as few as 11 percent felt strongly that most dentists were adequately trained to do so. Twenty-eight percent of dentists agreed that they were adequately trained to provide tobacco cessation education, and 71 percent of dentists agreed or strongly agreed that dentists should be trained to provide this service. In contrast, only 11 percent of dentists agreed or strongly agreed that they were adequately trained to

Seventy-one percent of dentists agreed or strongly agreed that dentists should be trained to provide tobacco cessation education.

provide alcohol cessation counseling, and only 50 percent of them believed that dentists should be trained to do so.

DISCUSSION

Discussion is warranted on the methodological and substantive aspects of the study findings. Methodologically, the low response rate raises issues about potential nonresponse bias and the impact of such potential bias on the generalizability, accuracy and uses of the study findings. The 50 percent response rate for the national survey was the same as that obtained for a pilot study carried out as part of the development of the national survey.¹³

This response level is fairly typical for surveys mailed to health practitioners²⁰ but conceivably could have been improved to 60 percent or higher with additional follow-up mailings.

The low response rate makes it statistically impossible to generalize the results to the target population of U.S. dentists in general practice at the time of the survey. For this reason, we made no effort to develop weighted estimates for the target population. Rather, we based the results on the unweighted data provided by the 3,200 general practice dentists who participated in the survey. This approach is consistent with the view that, whatever else the findings may represent, they are an accurate description of the oral pharyngeal cancer opinions and practices of those who responded.

In interpreting responses to the survey questions and in teasing out the implications of patterns of response for oral pharyngeal cancer prevention and early detection, one should consider the possibility that the survey results may describe a rosier situation with regard to the oral pharyngeal cancer practices of general practice dentists than actually may be the case. This possibility arises from the presumption that, compared with nonrespondents, survey respondents tend to have a greater interest in, or concern with, the topic being asked about in a survey. Under this presumption, the findings that have been presented may describe a situation that is "as good as it gets." This possibility has to be considered, despite the fact that there was some evidence to suggest that the 3,200 respondents were a reflec-

tion of all general practice dentists with regard to sex composition, year of graduation and practice type. Similarity in demographics does not guarantee that respondents and nonrespondents would be similar with regard to oral pharyngeal cancer opinions and practices. Accordingly, any interpretation of the survey findings needs to include a qualification that levels of comprehensive oral cancer screening practices, as well as levels of compliance with recommended oral cancer examination practices, may be somewhat higher in the 3,200 responding dentists than is actually the case in the target population. In this context, it should be noted that studies of physicians have documented a tendency to overreport their use of cancer examinations and screenings.^{21,22} By the same token, expressions of interest in oral cancer continuing education courses among respondents also may overstate the level of interest in such courses in the target population.

These methodological qualifications provide a context for considering the substantive implications of the study findings. For example, the findings on the oral pharyngeal cancer practices of dentists will be useful in planning educational interventions for practitioners and dental students, as well as in developing and implementing related policies.

Because intra- and extraoral palpation is an important part of a comprehensive oral cancer examination, it is inexplicable that only 35 percent of the dentists reported palpating lymph nodes for patients 18 years of age or older 80 percent or more of the time. This finding may



Dr. Horowitz is a senior scientist, National Institute of Dental and Craniofacial Research, National Institutes of Health, Building 45, Room 3AN 44B, Bethesda, Md. 20892-6401. Address reprint requests to Dr. Horowitz.



Dr. Drury is a statistician, National Institute of Dental and Craniofacial Research, National Institutes of Health, Bethesda, Md.

reflect dentists' lack of comfort in palpating lymph nodes,

which was an opinion expressed by some dentists in recently held focus groups.²³ Equally disturbing is that only 14 percent of dentists routinely provide oral cancer examinations for edentulous patients. It is noteworthy that edentulous patients have many of the characteristics (older age, being a current or former tobacco user) that may place them at high risk for developing oral pharyngeal cancer.

Although the majority of dentists rated their education in oral pharyngeal cancer prevention and early detection as good or very good, the majority held the view that their school did not place as much emphasis on this topic in terms of numerical requirements and the receipt of credit. Interestingly, only 25 percent of dentists strongly agreed that they were adequately trained to provide oral cancer examinations, and only 11 percent felt strongly that most other dentists were adequately trained to provide this procedure.

Because only 28 percent of dentists agreed that they were adequately trained to provide tobacco cessation counseling, these kinds of continuing educa-



Dr. Goodman is the director, Office of Oral Health, Maryland Department of Health and Mental Hygiene, Baltimore.



Dr. Yellowitz is an associate professor, Department of Oral Health Care Delivery, University of Maryland at Baltimore, School of Dentistry.

tion courses should be made available on a routine basis, and such training should be included in dental school curricula.²⁴⁻²⁶

Most dentists reported assessing their patients' current tobacco use. Far fewer determined their patients' previous tobacco use or types used. Both of these latter indicators provide important clues for the practitioner; previous use indicates that the patient remains at risk, and type of tobacco provides additional information as to where in the mouth to look with extra care. Inasmuch as only one smoker in four receives cessation advice from his or her physician, general practice dentists could play an important role in getting patients to quit their use of tobacco.²⁷

CONCLUSIONS

The self-reported practices of general dentists, their opinions about aspects of these practices and the self-assessed currency of their knowledge of oral pharyngeal cancer point to a need for systematic updates in the form of continuing education for practitioners. Greater emphasis on oral cancer prevention and early detection should be incorporated into dental school curricula. A large proportion of dentists indicated that the emphasis on oral cancer was

not comparable to other content areas in their dental schools. This suggests that dramatic, immediate steps need to be taken to reinforce the aspects of obtaining complete health histories, providing tobacco cessation counseling and performing a greater number of oral cancer examinations. A focus should be placed on the fact that early detection saves lives.

Because dental schools generally teach students to facilitate their passing of state, regional and national boards, the clinical portion of the boards should require applicants to demonstrate how to provide an oral cancer examination. The same concept should be considered for providers applying for relicensure. Applicants could, in fact, be required to take a course on oral pharyngeal cancer prevention and early detection.¹⁷ This concept is already accepted and incorporated in dental boards of many states regarding other areas such as cardiopulmonary resuscitation and infection control. Such a requirement certainly would help redirect students', faculties' and practitioners' attention to the prevention and early detection of oral pharyngeal cancer. Paying attention to these cancers is long overdue and timely, considering that more than one-third of Americans are now 45 years of age or older and nearly 40 million are 65 years of age or older—the

age groups at highest risk for oral pharyngeal cancer.²⁸ ■

The authors wish to acknowledge the valuable assistance of Richard Oldakowski for computer programming.

1. Greenlee RT, Murray T, Bolden S, Wingo PA. Cancer statistics, 2000. *CA Cancer J Clin* 2000;50:7-33.
2. Silverman S. Oral cancer. 4th ed. American Cancer Society. St. Louis: Mosby-Year Book; 1998:1-6.
3. Swango PA. Cancers of the oral cavity and pharynx in the United States: an epidemiologic overview. *J Public Health Dent* 1996;56(6):309-18.
4. Harras A, Edwards BK, Blot WJ, Ries LA, eds. Cancer rates and risks. 4th ed. Bethesda, Md.: Cancer Statistics Branch, Division of Cancer Prevention and Control, National Cancer Institute, U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health; 1996. NIH publication 96-691.
5. Mashberg A, Samit A. Early diagnosis of asymptomatic oral and oropharyngeal squamous cancers. *CA Cancer J Clin* 1995;45(6):328-51.
6. Marshall JR, Boyle P. Nutrition and oral cancer. *Cancer Causes Control* 1996;7(1):101-11.
7. Maden C, Beckmann AM, Thomas DB, et al. Human papillomaviruses, herpes simplex viruses, and the risk of oral cancer in men. *Am J Epidemiol* 1992;135(10):1093-102.
8. Fouret P, Monceaux G, Teman S, Lacourreye L, St. Guily JL. Human papillomavirus in head and neck squamous cell carcinomas in nonsmokers. *Arch Otolaryngol Head Neck Surg* 1997;123(5):513-6.
9. Horowitz AM, Nourjah P, Gift HC. U.S. adult knowledge of risk factors and signs of oral cancers: 1990. *JADA* 1995;126:39-45.
10. Horowitz AM, Nourjah PA. Factors associated with having oral cancer examinations among US adults 40 years of age or older. *J Public Health Dent* 1996;56(6):331-5.
11. Horowitz AM, Moon HS, Goodman HS, Yellowitz JA. Maryland adults' knowledge of oral cancer and having oral cancer examinations. *J Public Health Dent* 1998;58(4):281-7.
12. Update January 1992: the American Cancer Society guidelines for cancer-related checkup. *CA Cancer J Clin* 1992;42(1):44-5.
13. Yellowitz J, Horowitz AM, Goodman HS, Canto MT, Farooq NS. Knowledge, opinions and practices of general dentists regarding oral cancer: a pilot survey. *JADA* 1998;129:579-83.
14. Yellowitz JA, Goodman HS, Horowitz AM, al-Tannir MA. Assessment of alcohol and tobacco use in dental schools' health history forms. *J Dent Educ* 1995;59(12):1091-6.

15. Dolon TA, McGorray SP, Grinstead-Skigen CL, Mecklenburg R. Tobacco control activities in U.S. dental practices. *JADA* 1997;128:1669-79.

16. Tomar SL, Husten CG, Manley MW. Do dentists and physicians advise tobacco users to quit? *JADA* 1996;127:259-65.

17. U.S. Department of Health and Human Services. Healthy people 2010, conference edition. Washington: U.S. Department of Health and Human Services; 2000: 3-16-17.

18. Horowitz AM, Goodman HS, Yellowitz JA, Nourjah PA. The need for health promotion in oral cancer prevention and early detection. *J Public Health Dent* 1996;56(6):319-30.

19. Meskin LH. Do it or lose it (editorial). *JADA* 1997;128:1058-60.

20. Asch DA, Jedrzewski MK, Christakis NA. Response rates in mail surveys published in medical journals. *J Clin Epidemiol* 1997;50(10):1129-36.

21. 1989 survey of physicians' attitudes and practices in early cancer detection. *CA Cancer J Clin* 1990;40(2):77-101.

22. Brownson RC, Davis JR, Simms SG, Kern TG, Harmon RG. Cancer control knowledge and priorities among primary care physicians. *J Cancer Educ* 1993;8(1):35-41.

23. Horowitz AM, Sheikh A, Striphant S, Child WL. Perspectives of Maryland dentists on oral cancer (abstract 3283). *J Dent Res* 2000;79(special issue):554.

24. Centers for Disease Control and Prevention. Prevention and control of oral and pharyngeal cancer. Atlanta: Centers for Disease Control, the Division of Oral Health, National Center for Chronic Disease Prevention and Health Promotion; 1997.

25. Mecklenburg RE, ed. Tobacco effects in the mouth: A National Cancer Institute and National Institute of Dental Research guide for health professionals. Bethesda, Md.: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health; 1992. NIH publication 92-3330.

26. U.S. Department of Health and Human Services. Recommendations for three target audiences. In: Smoking cessation. Rockville, Md.: U.S. Department of Health and Human Services, Public Health Service, Agency for Health Care Policy and Research; 1996. AHCPR publication 96-0692:19-34.

27. Flocke SA, Stange KC, Goodwin MA. Patient and visit characteristics associated with opportunistic preventive services delivery. *J Fam Pract* 1998;47(3):202-8.

28. Population Estimates Program, Population Division, U.S. Census Bureau. Resident population estimates of the United States by age and sex: April 1, 1990 to November 1, 1999. Available at: "http://www.census.gov/population/estimates/nation/intfile2-1.txt". Accessed Feb. 28, 2000.