
Knowledge, Opinions, and Practices of Dentists and Dental Hygienists in Texas Regarding Oral Cancer

K Shetty, D Jones

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Abstract

Objectives: To assess the knowledge, opinions, and practices of dentists and dental hygienists in Texas on oral cancer (OC) prevention and early detection.

Methods: Data were collected by a self-administered mail questionnaire sent to 2000 registered dentists and dental hygienists throughout Texas who were picked at random from the mailing list of the Texas Cancer Council.

Results: The effective response rate to the survey was 40%. 82.6% of the respondents performed OC screenings routinely for their regular patients compared to 29.2% for their new patients. 66% believed that their current Knowledge on biopsy procedures was inadequate. 88% stated they received most of their oral cancer education (OCE) during training at dental or hygiene school.

Conclusions: There has been a four fold increase in the number of new patients who are screened for OC in the last decade by dental professionals. Nevertheless results indicate the need for increased OCE in the dental school curriculum and continuation of health education programs for health care providers.

INTRODUCTION

More than 30,000 people in the United States are diagnosed with oral and pharyngeal cancer each year. Oral cancer (OC) alone is responsible for more than 8,000 deaths each year, more than cervical cancer or malignant melanoma (Greenlee et al. 2000, Silverman, 1998). The number of deaths may be even higher since oral cancer is often masked by other, more conspicuous co-morbid conditions (Swango, 1996). If oral cancer is detected early, the prognosis for surviving it is better than most cancers (Mashberg and Samit, 1995). The five-year survival rate is 75% for those with localized disease at diagnosis, compared to only 16% for those with metastasis. Of the 13 major cancer sites, oral cancer has the fifth lowest five-year survival rate (Silverman, 1998).

Oral cancer is a disease with known high-risk factors and a symptomatic phase with identifiable clinical features. Countermeasures include an available and efficient screening modality and effective nondeforming treatment for the early lesion (Blot et al, 1998; Moore, 1966); however, most oral cancer lesions are not diagnosed until they are in

an advanced stage. Oral cancer is self-induced and largely a preventable disease. Those who are most likely to be at risk are tobacco users and alcohol abusers. The US Preventive Services Task Force advises clinicians to perform thorough oral examinations of those in these populations and of those with suspicious symptoms or lesions (Woolf et al, 1990). A review of several studies assessing oral cancer knowledge, opinions, and practices of physicians suggests that many physicians and dentists do not detect oral lesions in their early stages because of lack of knowledge (Prout et al. 1992; Pommerenke and Weed, 1991; Schnetler, 1992; Shafer, 1975; Sadowsky, Kunzel, Phelan, 1998; Guggenheimer et al. 1989). In the United States, physicians delayed oral cancer diagnosis because they confused oral cancers with traumatic, inflammatory, or infectious lesions (Crissman et al, 1980). However, a pilot survey of physicians' and dentists' knowledge, opinions, and practices concerning oral cancers found that 34% of dentists and 37% of physicians did not recognize the importance of early detection as a means of reducing morbidity and mortality from these diseases (Yellowitz and Goodman, 1995).

Dentists do not routinely inspect their patients to identify early, suspicious oral lesions (Maguire and Roberts, 1994; Pogrel, 1974) and failed to recognize oral cancer in 69% of the cases presented to them (Coffin, 1964). Though these reports span four decades, the results are basically unchanged. A recent survey of general dentists found that they are not as knowledgeable as they could be about cancer prevention and early detection (Yellowitz et al. 2000). In 1992, a survey of the attitudes, practices, and educational interests of Texas dentists regarding oral cancer indicated the need for further education in the area of oral cancer prevention (Dodds et al. 1994). The purpose of the present study was to review the knowledge, opinions, and practices of the dentists and dental hygienists of Texas regarding oral cancer and to provide baseline data on the experience of the oral health professional in Texas regarding oral cancer, management and referral strategy, and their belief in the efficacy of screening.

MATERIALS AND METHODS

The Texas Cancer Council provided the mailing list of all licensed dentists and dental hygienists in Texas who receive its newsletter, and the sample was randomly chosen from this list. A 13-item, self-administered, mail questionnaire was used for data collection. A total of 2000 questionnaires were mailed to the randomly selected sample of registered dentists and dental hygienists throughout Texas in the summer of 1999 along with stamped return envelopes for a quick and effective response. The investigators did not contact nonrespondents. The data obtained was analyzed with SPSS software. Descriptive statistics (frequency/% distribution) was performed on demographic characteristics, oral cancer knowledge, and opinions. Opinion variables that were discrete are presented as frequency and percentage distribution. Bi-variate analysis was performed with 'oral cancer knowledge is inadequate' as the dependent factor and demographic factors like gender, age, practice setting, and years in practice as the independent factor. Odds ratio and 95% confidence intervals were computed to determine strength of such associations. The level of significance alpha was set at less than or equal to 0.05.

RESULTS

A total of 815 completed questionnaires were returned. As a check against survey bias, the practice type of the respondents was tabulated. The majority of the respondents (61%) identified themselves as general practitioners followed by hygienists (22%) and specialists (12%). The remaining 4% did not identify their practice type or gave no

response. Most dentists surveyed were male, general practitioners, in practice for 10-20 years and between the ages of 35-44 (Table1).

Figure 1

Table 1: Demographic Characteristics of Survey Participants

	Dentists	Hygienists	Total
Sex			
Male	482 (80.9)	1 (0.6)	483 (62.7)
Female	114 (19.1)	171 (98.3)	285 (37.0)
Years in Practice			
1-5 years	46 (7.8)	27 (15.5)	73 (9.5)
6-10 years	67 (11.3)	35 (20.1)	102 (13.2)
11-20 years	218 (36.8)	66 (37.9)	284 (36.9)
21-30 years	135 (22.8)	39 (22.4)	174 (22.6)
More than 30 years	127 (21.4)	7 (4.0)	134 (17.4)
Practice Setting			
Faculty	20 (3.4)	9 (5.2)	29 (3.8)
Government	17 (2.9)	-----	17 (2.2)
Military	15 (2.5)	-----	15 (1.9)
Private	531 (89.1)	165 (94.8)	696 (90.4)
Resident	13 (2.2)	-----	13 (1.7)
Age			
Less than 35	58 (9.7%)	54 (31%)	112 (14.5%)
35-44	199 (33.4%)	75 (43.1%)	274 (35.6%)
45-52	152 (25.5%)	187 (20.1%)	339 (43.3%)
53-61	100 (16.8%)	9 (5.2%)	109 (14.2%)
62-70	69 (11.6%)	-----	69 (9.0%)
71 and over	18 (3.0%)	1 (0.6%)	19 (2.5%)

The first section of the survey addressed the general cancer screening practices of the practitioner (Table2). When asked if they provide oral cancer screenings, 82.6% indicated that they did for regular patients, but only 29.6% indicated that they did for new patients. However this represents a fourfold increase since the 1992 survey when only 7% of the respondents indicated that they provided oral cancer screening for new patients. Forty-three percent of the respondents indicated that they performed complete head and neck examination on regular patients, and 30% indicated that they did so, on new patients. Sixty-one percent informed regular patients about oral cancer warning signs and risk factors, but only 15.2% did so far with new patients and less than one-third increase the frequency of recall for patients at high risk for oral cancer.

Figure 2

Table 2: Type of routine oral cancer services provided (dentists vs. hygienists)

	New Patient		Routine check-up		Neither	
	Dentist	Hygienist	Dentist	Hygienist	Dentist	Hygienist
Screenings for oral cancer	186 (31.6)	42 (24.1)	501 (84.1)	135 (77.6)	14 (2.3)	9 (5.2)
Complete head/neck exams	191 (32.0)	43 (24.7)	267 (44.8)	62 (35.6)	116 (19.5)	54 (31.0) [p<.001]
Teach patient's self-examination	41 (6.9)	9 (5.2)	93 (15.6)	32 (18.4)	359 (60.2)	103 (59.2)
Inform about warning signs and risk factors	99 (16.6)	18 (10.3)	354 (59.4)	120 (69.0)	112 (18.8)	27 (15.5)
Increase the frequency of recall for patients	31 (5.2)	4 (2.3)	216 (36.2)	53 (30.5)	273 (45.8)	95 (54.6)

Almost two-thirds of the total respondents indicated that their current knowledge of biopsy procedures was inadequate (Table 3). Not unexpectedly, hygienists differed significantly from dentists in not knowing more about biopsy procedures for oral cancer. Over 70% of the total respondents indicated that their current knowledge of the treatment of early-stage oral cancers was inadequate, but only about 30% of the total respondents indicated that their knowledge of early detection of oral cancer was inadequate. Hygienists not surprisingly expressed lower current knowledge on treatment of late-stage oral cancers and the management of oral sequelae of cancer patients than dentists. Even though a high percentage of dentists and dental hygienists were able to diagnose OC, they were inexperienced in biopsy procedures and cancer management.

Figure 3

Table 3: Current Knowledge related to oral cancer

"I feel my current knowledge in the prevention of oral cancer is inadequate."		
	Dentist	Hygienist
Prevention of oral cancer	110 (18.5)	34 (19.5)
"I feel my current knowledge in the early detection of oral cancer is inadequate."		
	Dentist	Hygienist
Early detection of cancer	172 (28.9)	58 (33.3)
"I feel my current knowledge in the biopsy procedures related to oral cancer is inadequate."		
	Dentist	Hygienist
Biopsy procedures	363 (60.9)	133(76.4)*[p<.001]
"I feel my current knowledge in the treatment of early stage of oral cancers is inadequate."		
	Dentist	Hygienist
Treatment Early Cancer	433 (72.7)	125 (71.8)
"I feel my current knowledge in the treatment of advanced oral cancers is inadequate."		
	Dentist	Hygienist
Treatment Advanced Cancer	482 (80.9)	143 (82.2)
I feel my current knowledge in the management of oral sequelae of cancer therapy is inadequate."		
	Dentist	Hygienist
Management of pt. with cancer	393 (65.9)	133 (76.4)*[p<0.00]

Approximately 88% of the total respondents stated that they obtained most of their knowledge of oral cancer during training at dental/hygiene school (Table 4). Other sources that respondents identified were postdoctoral training, CE courses, and literature from the American Cancer Society. An overwhelming majority of the total respondents (90%) were interested in attending CE courses on oral cancer.

Figure 4

Table 4: Source of Current Knowledge on Oral Cancer

	Dentists	Hygienists
Dental/ Dental Hygiene School	556 (91.3)	124 (71.3)** [p<.01]
Postdoctoral training	186 (31.2)	0* [p<.001]
Literature	396 (66.4)	92 (52.9)* [p<.001]
CE Courses	366 (61.4)	102 (58.6)
American Cancer Society	174 (29.2)	44 (25.3)
Dental Oncology Program	121 (20.3)	38 (21.8)

Only about 22% of dentists believed that their knowledge was current when it came to early cancer treatment even though the perception of current knowledge in prevention and early detection of oral cancer is high (Table 5). Biopsy is the most referred service by dentists and dental hygienists (Table 6).

Figure 5

Table 5: Perception of Current Knowledge on Oral Cancer

	Dentist	Hygienist
Prevention of oral cancer	473 (79.4)	136 (78.2)
Early detection of cancer	407 (68.3)	113 (64.9)
Biopsy procedures	209 (35.1)	27 (15.5)* [p<.001]
Treatment Early Cancer	131 (22.0)	35 (20.1)
Treatment Advanced Cancer	81 (13.6)	20 (11.5)
Management of oral sequelae of cancer therapy	173 (29.0)	28 (16.1)* [p<.001]

Figure 6

Table 6: Oral cancer diagnosis/referral services provided (dentists vs. hygienists)

	Dentists	Hygienists
Referred a patient with oral cancer	280 (47.0)	61 (35.1)** [p<.01]
Performed biopsy procedures for potentially malignant lesions	155 (26)	32 (18.4)
Refer outside for Biopsy	421 (70.6)	108 (62.1)
Diagnosed a patient with oral cancer	130 (21.8)	20 (11.5)** [p<.01]
Provided dental treatment to a patient undergoing radiation therapy for cancer	339 (56.9)	98 (56.3)
Provided dental treatment to a patient undergoing chemotherapy for cancer	375 (62.9)	114 (65.5)

DISCUSSION

The investigators did not send out a second mailing of the questionnaires due to the financial constraints of a huge sample size, but an effective response rate was achieved with the first mailing, and we can assume that the responses of the representative sample would be indicative of the responses of dental health care providers throughout Texas.

Oral cancer is a fatal disease, and dentists encounter it on a regular basis. Two of the most important public health issues are (a) the modest decrease in the incidence of oral cancers (6.4%) between 1973 and the present compared with the impressive decrease in cervical cancer (38.1%) in the same time period (Greenlee et al, 2000); (b) the advanced stage at which more than one half of oral cancer cases are diagnosed. These issues suggest that, despite known risk factors, anatomical accessibility, and periodic or occasional visits of patients and at-risk persons to physicians and dentists, an effective primary or secondary prevention is not yet in place. Only a small number of health care providers perform regular/periodic OC screening (Horowitz, Nourjah, Gift, 1995; Martin et al, 1996; Horowitz and Nourjah, 1996;). Screening is essential for detection. Improving OC training in dental schools is an effective way of promoting OC exams

among general practitioners(Warnakulasuriya and Johnson, 1999; Yellowitz et al, 2000).

It is no surprise that a more substantial decrease in the development of new cases has not occurred, that many pre-neoplastic lesions are missed before they become frankly invasive, and that the majority of cases are detected only when they have reached a regional or metastatic stage. Dentists need to determine their patient's risk for oral cancer and provide routine and comprehensive oral cancer examinations (Horowitz et al, 2000). There is a tendency for clinicians to focus on symptomatology with little effective effort of early detection. Some of the common barriers that may explain the underutilization of OC screening include uncertainty about screening guidelines, inadequate training in counseling and educating patients (particularly on strategies for life-style modifications), difficulty in obtaining provider reimbursement, pessimism about cost-benefit and/or the scientific basis of prevention and screening options, additional costs to patients, and logistical problems in the office setting (i.e., time constraints, staff, or referral sources). The ability to control OC will depend on prevention and early diagnosis. Continuing educational campaigns are needed at the local, state, and national level in order to educate the public about the risk factors and early signs/symptoms associated with this disease.

CORRESPONDENCE TO

Dr. Kishore Shetty
 Associate Professor - Medically Complex Patient Clinic
 University of Texas Health Sciences Center
 6516 M.D.Anderson Boulevard, Suite #475
 Houston Texas 77030
 Phone: 713.500.4269

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Author Information

Kishore Shetty, D.D.S.

Medically Complex Patient Clinic, (Department of General Dentistry), University of Texas Health Sciences Center,
(Louisiana State University Health Sciences Center)

Daniel Jones, Ph.D., D.D.S.

Department of Public Health Sciences, Baylor College of Dentistry