

Scientific Article

Caries Risk Assessment Practices Among Texas Pediatric Dentists

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Abstract: Purpose: The purpose of this study was to determine current caries risk assessment (CRA) practices of Texas pediatric dentists. **Methods:** A 20-question survey was sent to all 204 active members of the Texas Academy of Pediatric Dentistry. The mailing list was obtained from the Texas Academy of Pediatric Dentistry roster. **Results:** The response rate was 62% (127/204). Eighty-three percent of respondents reported that parents are receptive to education about caries risk factors. Socioeconomic status was unrelated to receptivity. Ninety-three percent of respondents reported that they are actively involved in CRA. Thirty-eight percent of those responding reported performing CRAs on greater than 76% of their patients; 9% reported no CRA use. Forty percent of respondents reported that they assess caries risk but do not document the caries risk status. Seventy percent of respondents reported a desire for more CRA education. No significant differences were found between: (1) year of graduation; (2) practice type; or (3) payer sources received and CRA practices. **Conclusions:** A need exists for more comprehensive caries risk assessment practices and increased documentation of caries risk status by Texas pediatric dentists. The continuing education of dental professionals in caries risk assessment is essential. (*Pediatr Dent* 2008;30:49-53) Received July 24, 2006 / Last Revision March 15, 2007 / Revision Accepted March 16, 2007.

KEYWORDS: PREVENTION, CARIES RISK ASSESSMENT, CLINICAL PRACTICE, PEDIATRIC DENTISTRY, DENTAL CARIES

Caries risk assessment (CRA) is a relatively new phenomenon that provides dental professionals a means of addressing the caries disease process and the risk factors that are potential contributors to the process. A risk factor is defined as “any aspect or baseline characteristic of a study population that affects the likelihood of observing the clinical event of interest.”¹ Caries risk factors include: (1) caries history (most important in determining future caries activity); (2) health history; (3) salivary flow; (4) fluoride exposure; (5) diet (including consumption of simple sugars in food and drink); (6) oral hygiene; (7) socioeconomic status (SES); and (8) mother’s caries history.

CRA in young children is of particular interest, as the primary risk factor—previous caries experience—may not be very useful in this population.² It is important to determine other potential risk factors while providing parent education and interventions before disease is manifest.

In 2002, the American Academy of Pediatric Dentistry (AAPD) released a policy statement on the use of a caries-risk

assessment tool. While caries risk assessment is, according to the AAPD, “an essential element of contemporary clinical care for infants, children, and adolescents,”³ the Academy realized that a practical tool needed to be developed. A clinically useful caries risk assessment tool should be: (1) user-friendly; (2) quick; (3) easy to interpret; (4) clinically applicable; and (5) comprehensive in identifying risk factors.^{3,4} The policy encouraged both dental and nondental health care providers to use the caries-risk assessment tool—which was revised in 2005³—in the care of their young patients.

With dentistry’s shift towards prevention and treatment of caries as a disease process, it becomes necessary for the practitioner to address caries risk in the office, and provide formal documentation for legal purposes. Several lawsuits in California have been based on caries risk assessment as a “standard of care.” Furthermore, pediatric dentists have lost lawsuits because they provided restorative care but failed to provide proof that they addressed the disease entity and the risk factors associated with caries formation.⁵ It is unknown how many dental offices are currently employing any type of formal CRA protocol or whether any CRA is being done at all.

This study’s purpose was to determine how caries risk assessment is practiced by Texas pediatric dentists. This survey attempted to address the following questions:

1. Is the practitioner’s office doing a formal CRA?
2. Is the practitioner’s office documenting the CRA?

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3. Who in the office is performing the CRA?
4. Does the practitioner believe continuing education in CRA is needed?

Methods

This study was reviewed by the Institutional Review Board of Baylor College of Dentistry and given “exempt” status. A 20-question survey was sent in one mailing to all 204 active members of the Texas Academy of Pediatric Dentistry. Questions addressed practice demographics, including the:

1. population of the city/town in which the practice was located;
2. year of graduation from pediatric residency program;
3. type of practice regarding the number of daily appointments made for prevention/recall vs restorative appointments;
4. primary patient payer source;
5. preventive practice patterns, including procedures involved in a typical recall appointment;
6. preventive treatments used in the practice;
7. documentation of preventive recommendations;
8. parental receptivity to education about caries risk factors; and
9. members of the dental team who are providing preventive education.

Questions also focused on caries risk assessment practices, including the:

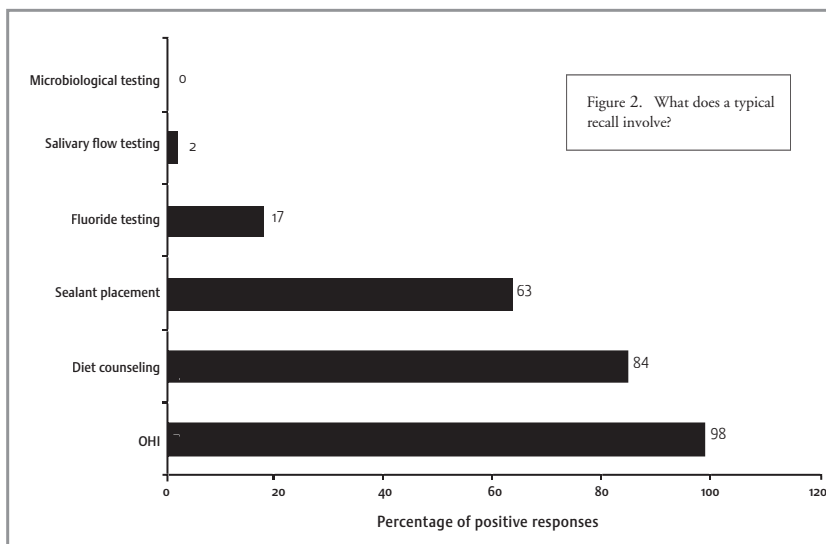
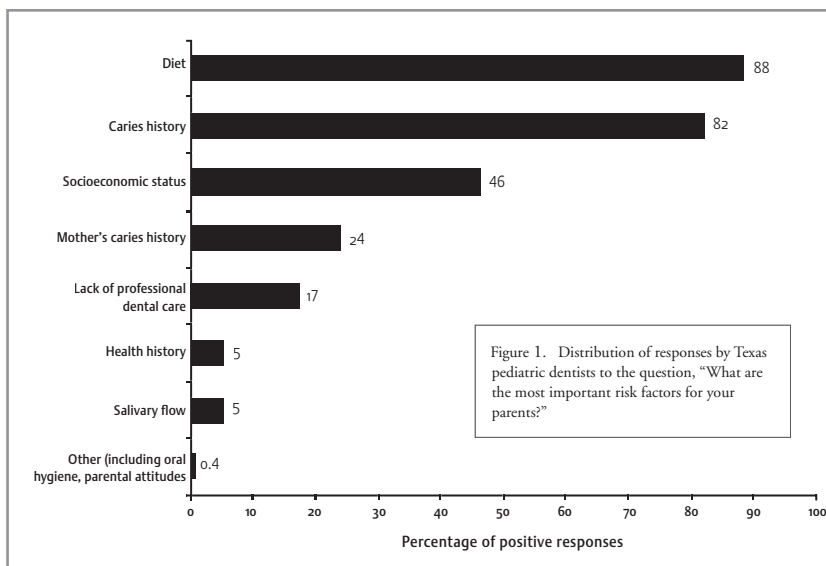
1. percentage of patients in the office who have received a CRA;
2. type of CRA tool used, if any;
3. documentation of caries risk status;
4. perceptions of caries risk assessment tools; and
5. need for further education.

A Likert scale was used when appropriate as a means of rating the responses in order of perceived importance.

Statistical analysis. Responses were analyzed using SPSS (v. 13, SPSS Inc, Chicago, Ill). Descriptive statistics and frequency analyses were performed. The chi-square test and cross-tabulations were used for correlation, and a significance level was set a priori at $P < .05$.

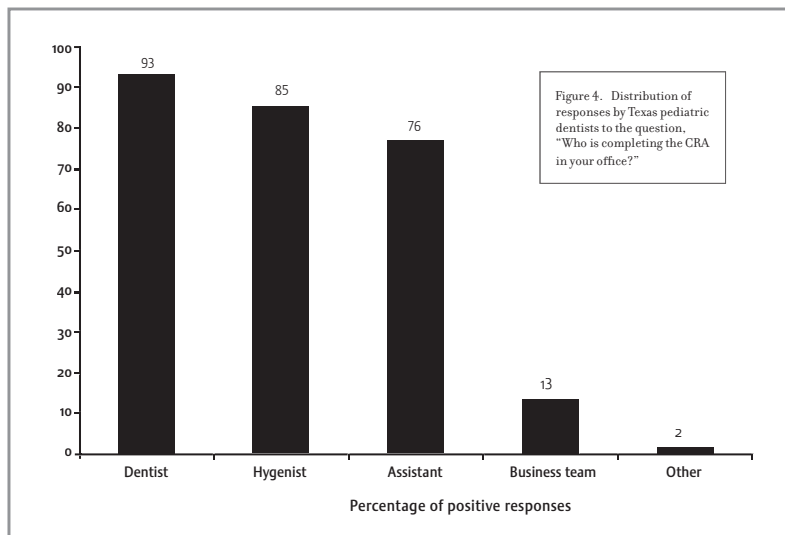
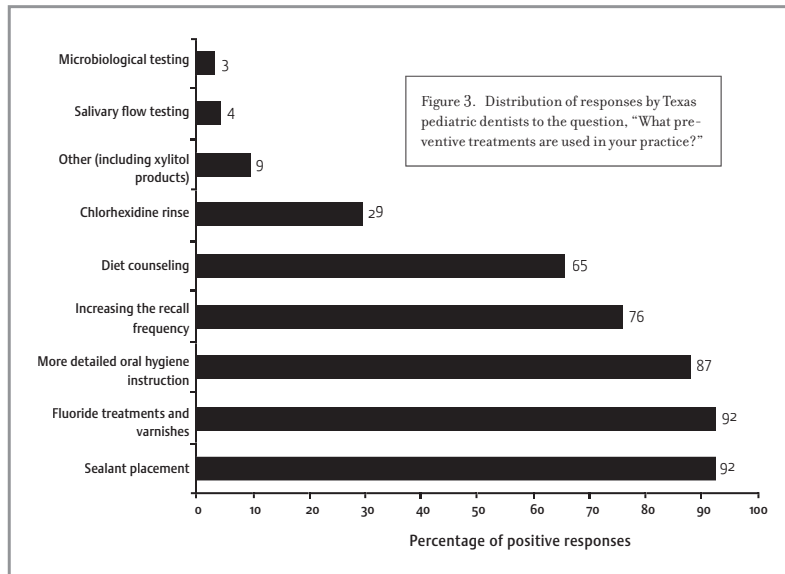
Results

Of 204 surveys, 127 (62%) were returned. The most important risk factors cited (Figure 1) were: (1) diet (88%); (2) caries history (82%); and (3) socioeconomic status (46%).



Almost all responding pediatric dentists (98%) reported providing oral hygiene instruction (OHI) during a recall appointment, and 84% reported educating their patients about dietary risk factors. Two thirds of respondents (67%) place sealants for prevention. Fewer than 2% of respondents reported using salivary flow testing or microbiological testing during a recall appointment (Figure 2).

Figure 3 details preventive treatments used by those surveyed. Texas pediatric dentists employed the following when providing preventive care: (1) sealant use; (2) increased use of fluoride; (3) OHI and diet counseling; and (4) increased recall frequency. Most respondents (83%) reported that parents are very or somewhat receptive to education about caries risk factors; SES was unrelated to the parents' receptivity.



Eighty-nine percent of responding pediatric dentists agreed that it is important to assess the caries risk of their patient population. Approximately 76% of responding pediatric dentists have more than one person on their team involved in CRA (Figure 4)—with the dental assistant, the dental hygienist, or the dentist completing the CRA. Nearly all (99%) respondents reported no separate fee for completing a CRA.

A slight majority (56%) of pediatric dentists responded that they implement different preventive programs in their office based upon the patients' caries risk status, while 33% reported that all patients participated in the same preventive program, regardless of their risk status. In a separate question, 99% of responding pediatric dentists agreed that, based on caries risk status, they would alter the patient's restorative treatment plan.

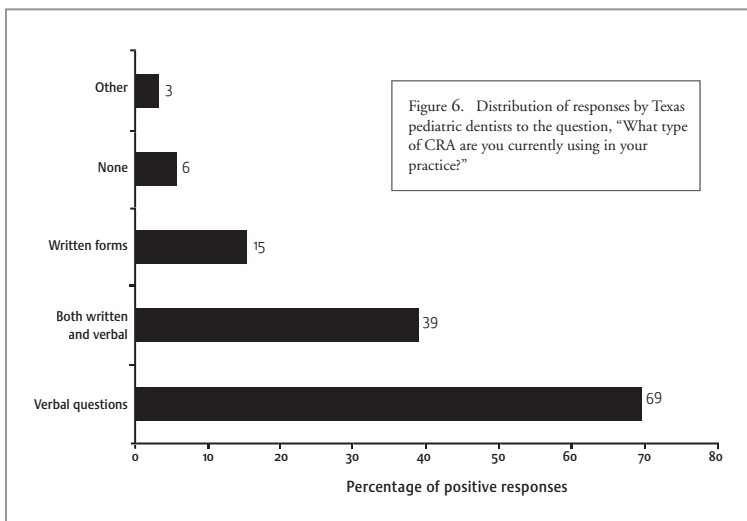
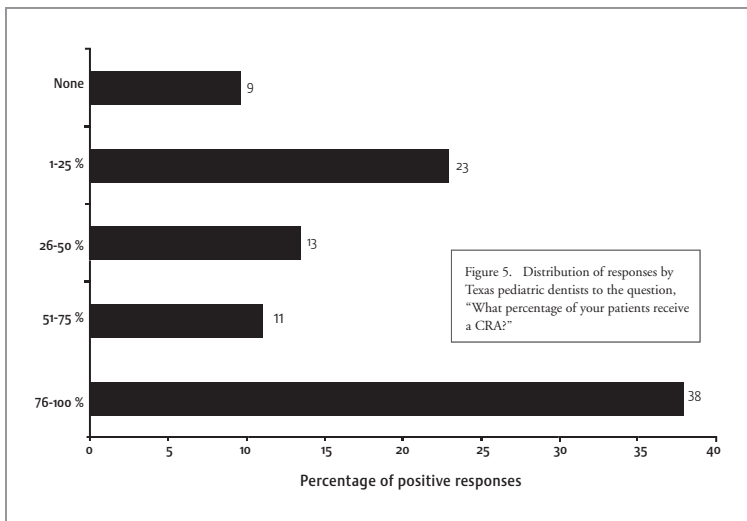
Thirty-eight percent of those answering the survey reported performing CRAs in the office on more than 76% of their patients, and 9% stated that they are not currently performing CRAs in their office (Figure 5). Over two thirds (69%) of respondents reported using verbal questions only to assess risk, while 39% use both written and verbal CRAs (Figure 6). It was found, however, that a vast majority (87%) of those respondents reported documenting preventive treatment recommendations in the dental chart, while only 12% denied documentation of preventive recommendations.

Of responding pediatric dentists' offices funded primarily by Medicaid, 47% reported implementing customized preventive programs based on caries risk status, compared with 61% of offices funded by commercial insurance and 70% of private pay offices. Two thirds (67%) of respondents stated a need for more education about CRA, and 82% would be interested in a clinically useful tool for CRA. No significant differences were found between the type of practice (preventive, restorative) and whether or not a CRA is completed ($P=.361$). There was no significant difference between the payer sources received by the practice (self-pay vs Medicaid) and the likelihood of doing a CRA ($P=.116$). No correlation was found between year of graduation from a pediatric residency program and CRA practices ($P=.083$).

Discussion

The response rate was 62%, which is high for a single mailing. This may indicate that practitioners are very interested in this topic. Ultimately, the results represent the beliefs and practices of Texas pediatric dentists and, therefore, they may not reflect risk assessment practices throughout the country. A much larger survey that includes the entire AAPD mailing list would provide much more information.

An interesting finding of this study was that, while 89% of responding pediatric dentists considered diet to be the most important caries risk factor for their patients, 16% of these same dentists never provide diet counseling to their patients at a typical recall appointment. In a recent study by Sajjani-Oommen et al, it was found that 79% of pediatric dentists believed that diet counseling regarding cariogenic foods has at least some effectiveness, while only 71% routinely provided nutritional counseling.⁶ It is disturbing that pediatric dentists are not educating patients about the risk factor they consider to be the most important in influencing dental decay. These reasons should be addressed. Perhaps the



caregivers; while the parent may bring the child to the appointment, nutritional counseling could best be given to the person most involved in the patient's daily care.

Currently, only about one third of responding pediatric dentists reported that more than 75% of their patients have received at least 1 caries risk assessment in their practice, while 1 in 10 reported that they have never completed a formal CRA on any of their patients. As the focus of dentistry shifts towards prevention and assessing caries risk becomes the standard of care, it is imperative that dentists assess and address those factors that place the patient at risk for developing caries. Caries risk assessment should be a standard of care, and when that standard is not upheld, patient care is compromised; ultimately pediatric dentists themselves are at risk for legal issues related to substandard care.

It is encouraging that almost all of the responding pediatric dentists reported "active involvement" in patient preventive care and education. It is unknown however, what role the dentist personally plays in assessing risk or educating the patients about risk factors. Further studies are needed to determine what pediatric dentists consider to be their role in CRA and delegation of CRA and patient education to other dental staff. Perhaps dental hygienists and assistants should be educated about caries risk factors and be able to provide CRA and instruction to parents and patients. Other studies have shown that, when properly educated, dental hygienists and assistants are capable of assessing risk with good reliability compared to pediatric dentists.⁷ This survey's results suggest that, in greater than 76% of responding pediatric dentists' practices, multiple people perform the CRA (Figure 1).

reason they feel nutritional counseling may not decrease the development of new caries is that pediatric dentists may not be providing practical, useable dietary counseling.

Nutritional counseling should be tailored to the individual patient. For instance, for a child who drinks 5 sodas per day, the parent is not likely to discontinue sodas abruptly, especially when a 12-pack of soda may be less expensive than a gallon of milk. Perhaps parents could wean children off sodas by allowing them only at meal times or on a special occasion. Other easier changes in diet could include replacing sugar-laden candies with sugar-free gum and substituting juices with sugar-free Kool-Aid.

Although an American Dental Association (ADA) code exists for nutritional counseling, the practitioner is not reimbursed for the time spent; the only person who is paid for detailed nutritional counseling is a nutritionist and then only after referral from a primary care physician. Further complicating the situation are mixed-generation families and non-familial

practices, multiple people perform the CRA (Figure 1). More than one person reinforcing the risk assessment could be instrumental in achieving behavior modification. According to the hierarchy of learning, some people learn by repetition.

At the very least, having more than one person in the dental office reinforcing mechanisms to decrease caries risk implies an air of importance to the patient's caregiver. None of the pediatric dentists who responded to this survey reported charging a separate fee for completing a CRA. Although it is ideal that every patient receive a thorough risk assessment and be provided with information about risk factors, it may be difficult to expect that, without compensation, pediatric dentists themselves will expend the time and effort in patient education. Delegating CRA to dental auxiliaries may also allow pediatric dental practices to provide economic and appropriate care.

It is incumbent on the dentist to provide:

1. documentation of the patient's risk status;
2. proof that education about pertinent risk factors was provided to the patient and/or parent; and
3. preventive treatment recommendations.

Therefore, it is alarming that approximately 70% of respondents reported using only verbal questions to assess caries risk, while fewer than half (39%) utilize both written forms and verbal questions. Additionally, nearly half of the respondents who use CRA in their office do not document the patient's risk status in the dental record. Perhaps an ADA code should be created for accountability purposes.

It is troubling that 1 in 3 Texas pediatric dentists who responded indicated that they do not alter a patient's preventive plan, based upon the caries risk status of the patient, while 99% of respondents agreed that they would alter the restorative plan based on risk status. Providing a CRA will prove ineffective if it is not accompanied by changes in the treatment approach to decrease dental caries risk. Changes should address the factors that place the patient at higher risk for developing cavities.

There was no significant difference in the likelihood that a patient would receive a CRA based upon the primary payer source for the practice (private pay, commercial insurance, or Medicaid). Government insurance-funded practices in this study, however, were less likely to provide individualized treatment plans based on caries risk status (47%) than practices funded by commercial insurance (61%) or private pay offices (70%). This could be due to the fact that Medicaid and Children's Health Insurance Program (CHIP) programs pay for certain treatments, but may not reimburse for others, including increased recall frequency. This study's Medicaid sample was limited, as only 8 of 127 respondents claimed to be more than 50% Medicaid-reimbursed. Hence, further research is needed to determine if this can be generalized to all Medicaid providers.

In a population that tends to be funded by government-supported insurance (Medicaid, CHIP), the patients—by virtue of being of lower socioeconomic status—are automatically at higher risk for developing dental decay. It is even more important for these patients to receive a thorough CRA and follow-up preventive care appropriate to the risk status. Therefore, it is necessary to: (1) increase awareness of the need for an ADA code for completing a CRA; and (2) provide proper preventive care to avoid costly restorative fees in the future.

Most pediatric dentists who responded to this survey were interested in receiving more education about caries risk assessment. As pediatric dentists begin to take a more "medical" approach to the management of dental caries, it is necessary to provide continuing education about dental caries, risk factors, and treatment options. Research to develop improved clinical risk assessment tools should also be considered.

Conclusions

There is a need for more comprehensive CRA practices and increased documentation of caries risk status by pediatric dentists in Texas. Continuing education for dental professionals to assess caries risk is essential.

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