

A comparison of general dentists' and pediatric dentists' treatment recommendations for primary teeth

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Abstract

A survey which included a series of demographic questions, a brief clinical history, and pictures of eight radiographs was mailed to 2000 general dentists and 1000 pediatric dentists. Usable responses were received from 1369 (45%) dentists — 765 (38%) general dentists, and 604 (60%) pediatric dentists. The dentists were asked to select the optimal treatment for a specified tooth in each radiograph. The results of this survey indicate that there were differences in the treatment recommendations of general and pediatric dentists. Whether or not pulp therapy was recommended, general dentists frequently recommended restoring teeth with amalgam. Pediatric dentists more frequently recommended restoring primary teeth with stainless steel crowns. There were differences in treatment recommendations within each group of practitioners, as well as between the two groups. (Pediatr Dent 13:344–48, 1991)

Introduction

Comparison of Treatment Recommendations for Primary Teeth

Health services research is coming of age; quality assurance, cost-effectiveness, and measurable outcomes are part of the vocabulary being used to discuss health care and health care providers (Crall and Beazoglou 1989). Although medicine has received attention in regard to health services issues (Palmer 1983; Hsiao et al. 1988) there is limited information available in the diagnosis and treatment of patients by dental professionals (Morris et al. 1988). In addition, data which pertain directly to dental care provided for children is limited (Waldman 1990), even though children between the ages of 5 and 17 continue to be the group most likely to have been seen by a dentist in the past 12 months (Hayward et al. 1989). A recent survey of radiographic examination practices for children by general dentists and pediatric dentists (Hanes et al. 1990; Myers et al. 1990) compared the radiographic recommendations of dentists based on practice type, and revealed significant differences between the radiographic examination practices of the generalists and specialists. However, this survey provided no information related to diagnosis and recommendations for treatment.

The purpose of this project was to evaluate differences in treatment recommendations of general dentists and pediatric dentists for selected conditions involving primary teeth.

Materials and Methods

A survey was mailed to 2000 general dentists and 1000 pediatric dentists randomly selected from the American Dental Association's national membership

roster through the Association's Data Processing Service.

The survey included three demographic questions: age; type of practitioner; and the primary location (state) of practice. There were eight pictures of intraoral radiographs (Figure, A–H) along with the age of each patient and a brief statement indicating that all the patients were healthy, asymptomatic, and cooperative, and that payment for services should not be considered a factor. The dentists were asked to evaluate a specified tooth in each radiograph and to recommend their optimal treatment for that tooth from nine options (Table 1).

For each case, the treatment recommendations of general dentists and pediatric dentists were compared. The data were analyzed using Chi-square statistical tests.

Table 1. Percentages of dentists who recommended treatments for Case 1

Treatment	General Dentists (%)	Pediatric Dentists (%)
No treatment	<1	<1
Extraction	0	0
Amalgam	61	33
Composite	4	2
Amalgam/pulpotomy	22	7
Stainless steel crown	4	21
SSC & pulpotomy	8	36
SSC & pulpectomy	<1	1
Refer to specialist		

$P < .0001, \chi^2 = 343.64$

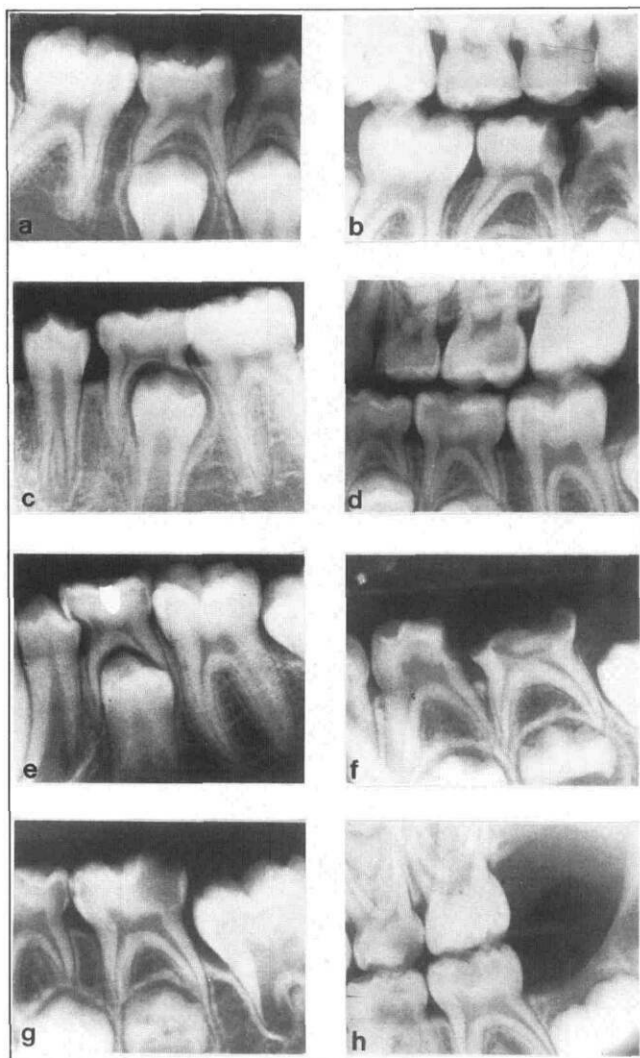


Figure. Radiographs of the clinical cases depicted in the survey.

Results

There were 1369 usable surveys returned, 604 (60%) from pediatric dentists and 765 (38%) from general dentists.

This paper reports the findings of the survey based on practice type. The treatment option "refer to specialist" was included as a possible recommendation, because in certain of the cases, that would have been a viable choice for some dentists. Because pediatric dentists did not select "refer to specialist" in any of the cases, there was the possibility of bias in the statistical analysis. Case 6 was the only one in which 10% of the general dentists chose "refer to specialist." For all other cases, less than 10% of the general dentists recommended referral. Therefore, the Chi-square tests were based only on the other eight treatment options.

In Case 1 (Fig A), dentists were asked to recommend treatment for a moderately large carious lesion on a

mandibular second primary molar. The majority of general dentists (61%) recommended an amalgam for this tooth (Table 1). The pediatric dentists were more varied in their treatment recommendations; 33% recommended an amalgam, 21% recommended a stainless steel crown, and 36% recommended a pulpotomy and stainless steel crown.

Case 2 (Fig B) requested a treatment recommendation for a mandibular second primary molar with an area of internal resorption in the mesial root. Eighty-three per cent of general dentists recommended a treatment that included pulp therapy (Table 2). Forty-nine per cent of general dentists recommended a pulpectomy and stainless steel crown. Fifty per cent of pediatric dentists recommended extracting this tooth, while 43% recommended a pulpectomy and restoration with a stainless steel crown.

Case 3 requested a treatment recommendation for an incipient carious lesion on the mesial of the mandibular second primary molar with extensive distal root resorption (Fig C). Fifty-one per cent of general dentists and 61% of the pediatric dentists recommended extracting this tooth (Table 3, see next page). Forty-seven per cent of general dentists and 37% of pediatric dentists recommended no treatment.

In Case 4, the dentists were asked to recommend treatment for a large carious lesion involving the occlusal surface of the mandibular second primary molar (Fig D). Fifty-two per cent of general dentists recommended a pulpotomy followed by restoration with amalgam (Table 4, see next page). Another 27% of general dentists recommended an amalgam restoration only. Forty-eight per cent of the pediatric dentists recommended a pulpotomy followed by stainless steel crown placement. Twenty-two per cent of pediatric dentists recom-

Table 2. Percentages of dentists who recommended treatments for Case 2

Treatment	General Dentists (%)	Pediatric Dentists (%)
No treatment	0	0
Extraction	13	50
Amalgam	0	0
Composite	0	0
Amalgam/pulpotomy	18	1
Stainless steel crown	4	1
SSC & pulpotomy	16	5
SSC & pulpectomy	49	43

$P < .0001$, $\chi^2 = 306.64$

Table 3. Percentages of dentists who recommended treatments for Case 3

<i>Treatment</i>	<i>General Dentists (%)</i>	<i>Pediatric Dentists (%)</i>
No treatment	47	37
Extraction	51	61
Amalgam	2	2
Composite	0	0
Amalgam/pulpotomy	0	0
Stainless steel crown	0	0
SSC & pulpotomy	0	0
SSC & pulpectomy	0	0

$P < .005, \chi^2 = 15.65$

mended a pulpotomy followed by restoration with amalgam while 20% of pediatric dentists recommended only an amalgam restoration.

Case 5 requested a treatment recommendation for a partially resorbed mandibular second primary molar that appeared to hinder eruption of the adjacent premolar. In addition, the permanent second molar is ahead of the premolar and appeared to exert a mesial force (Fig E). Seventy-eight per cent of general dentists and 75% of pediatric dentists recommended extracting this tooth (Table 5). Nineteen per cent of general dentists and 20% of pediatric dentists recommended no treatment for this tooth.

Case 6 requested a treatment recommendation for an extensive carious lesion involving the second primary molar in a patient with an actively erupting first permanent molar (Fig F). Fifty-one per cent of general dentists and 66% of pediatric dentists recommended a pulpotomy followed by a stainless steel crown for this tooth (Table 6, see next page). Forty-one per cent of general dentists and 31% of pediatric dentists recommended a pulpectomy and a stainless steel crown for the tooth.

In Case 7, a treatment recommendation was requested for a mandibular second primary molar with a small mesial carious lesion and an extensive distal carious lesion. An adjacent actively erupting first permanent molar was apparent (Fig G). Sixty-one per cent of general dentists and 83% of pediatric dentists recommended a pulpotomy and stainless steel crown (Table 7, see next page). Nineteen per cent of general dentists and 15% of pediatric dentists recommended a pulpectomy and stainless steel crown. Sixteen per cent of general dentists and 1% of pediatric dentists recommended a pulpotomy followed by an amalgam restoration.

For Case 8, dentists were asked to recommend treatment for a maxillary first primary molar with an exten-

sive carious lesion involving the distal portion of the tooth (Fig H). Forty-two per cent of general dentists recommended a pulpotomy and an amalgam, while only 5% of pediatric dentists made that recommendation (Table 8, see next page). Thirty-seven per cent of general dentists and 76% of pediatric dentists recommended a pulpotomy and stainless steel crown restoration.

Discussion

Of 3000 mailed surveys, 1369 were returned in a form which could be analyzed, yielding a response rate of 45%. An overall response rate of this magnitude for a once-mailed dental survey has been shown to adequately represent the population surveyed, with minimal possibility of nonresponse bias (Hovland et al. 1980)

Factors such as overall caries status and occlusion are important aspects in clinical diagnosis and treatment

Table 4. Percentages of dentists who recommended treatments for Case 4

<i>Treatment</i>	<i>General Dentists (%)</i>	<i>Pediatric Dentists (%)</i>
No treatment	6	2
Extraction	0	0
Amalgam	27	20
Composite	5	3
Amalgam/pulpotomy	52	22
Stainless steel crown	0	2
SSC & pulpotomy	9	48
SSC & pulpectomy	1	3

$P < .0001, \chi^2 = 316.00$

Table 5. Percentages of dentists who recommended treatments for Case 5

<i>Treatment</i>	<i>General Dentists (%)</i>	<i>Pediatric Dentists (%)</i>
No treatment	19	20
Extraction	78	75
Amalgam	<1	1
Composite	0	0
Amalgam/pulpotomy	<1	0
Stainless steel crown	0	2
SSC & pulpotomy	1	2
SSC & pulpectomy	1	1

$P < .001, \chi^2 = 23.50$

Table 6. Percentages of dentists who recommended treatments for Case 6

<i>Treatment</i>	<i>General Dentists (%)</i>	<i>Pediatric Dentists (%)</i>
No treatment	0	0
Extraction	4	2
Amalgam	0	0
Composite	<1	0
Amalgam/pulpotomy	0	0
Stainless steel crown	3	1
SSC & pulpotomy	51	66
SSC & pulpectomy	41	31

$P < .0001, X^2 = 38.10$

planning. Because these factors were not considered in this survey, the results should not be interpreted to be directly representative of the clinical situation. However, the results do provide the opportunity to evaluate a large number of dentists' treatment recommendations for a series of specific situations.

In a given clinical situation, there may be multiple appropriate treatment options. The goal of the project was not to decide the one optimal treatment for each tooth, but rather to evaluate the recommendations dentists actually made for specific clinical situations. The eight cases depicted conditions with clear, radiographic evidence of disease which would be expected to elicit a treatment recommendation from a practitioner. As was expected, there were differences within the two groups of practitioners, as well as between the two practice types. In only four cases (3, 5, 6 and 7) did the majority of both general dentists and pediatric dentists recommend the same treatment. In half the cases, there was no clear consensus as to the "optimal treatment."

General dentists recommended restoring primary teeth with amalgam much more frequently than did pediatric dentists, possibly because of general dentists' greater familiarity with amalgam and relative inexperience with stainless steel crowns. While in dental school, predoctoral students have few opportunities to place stainless steel crowns on child patients (Bell et al. 1986). Pediatric dentists gain considerable experience with stainless steel crowns during their advanced education programs. They also are more likely than general dentists to be familiar with the literature describing the frequent problems of Class II amalgam restorations in primary teeth (Dawson et al. 1981; Messer and Levering 1988).

The pediatric dentists included pulpotomies in their recommendations more frequently (1, 4, 5, 6, 7, and 8)

than did general dentists. When general dentists did recommend a pulpotomy, they were more likely to suggest completing treatment with an amalgam restoration, while most pediatric dentists recommended a stainless steel crown following a pulpotomy. General dentists did not recommend pulpotomies as often as pediatric dentists; however, in four cases (2, 6, 7, and 8), a higher percentage of general dentists recommended pulpectomies. In Case 2, 83% of general dentists recommended a procedure including pulp therapy. For this particular tooth, the pediatric dentists' recommendations were divided almost equally — 49% extraction vs. 50% a treatment including a pulpotomy or pulpectomy. There is wide disparity between and within the groups regarding the optimal treatment for this tooth. Many of the dentists apparently either did not recognize, or had

Table 7. Percentages of dentists who recommended treatments for Case 7

<i>Treatment</i>	<i>General Dentists (%)</i>	<i>Pediatric Dentists (%)</i>
No treatment	0	0
Extraction	0	0
Amalgam	1	0
Composite	<1	0
Amalgam/pulpotomy	16	1
Stainless steel crown	2	2
SSC & pulpotomy	61	83
SSC & pulpectomy	19	15

$P < .0001, X^2 = 122.88$

Table 8. Percentages of dentists who recommended treatments for Case 8

<i>Treatment</i>	<i>General Dentists (%)</i>	<i>Pediatric Dentists (%)</i>
No treatment	1	<1
Extraction	<1	0
Amalgam	6	5
Composite	2	1
Amalgam/pulpotomy	42	5
Stainless steel crown	2	5
SSC & pulpotomy	37	76
SSC & pulpectomy	9	8

$P < .0001, X^2 = 296.81$

different interpretations of, the significance of the internal resorption.

For Cases 5 and 6, both groups of dentists made similar treatment recommendations. In Case 5, the majority of both general dentists (78%) and pediatric dentists (75%) recommended extracting the second primary molar, which was in the eruptive path of the mandibular first premolar. For Case 6, 92% of general dentists and 97% of pediatric dentists recommended either pulpotomies or pulpectomies to attempt to retain the severely broken down second primary molar adjacent to an actively erupting first permanent molar. The statistical difference lies in the pulpotomy vs. pulpectomy recommendations. The majority of both groups recommended stainless steel crowns, but it is interesting that general dentists recommended the technically more difficult pulpectomy more often than did the pediatric dentists. It is unlikely that the general dentists actually would perform the more complex pulpectomy procedure more frequently than would the pediatric dentists. It is possible that there was some difference in interpretation of terminology between the two groups.

The explanation for the differences observed between the two groups of dentists probably is related to education and experience. The advanced education of pediatric dentists may provide greater familiarity with pulpotomy and stainless steel crown techniques, and an awareness of the limited life span of complex amalgams in primary teeth (Dawson et al. 1981; Messer and Levering 1988).

Conclusions

The results of this survey indicate that general dentists and pediatric dentists differ in their treatment recommendations. For these cases, whether or not pulp therapy was recommended, general dentists frequently recommended restoring teeth with amalgam, while pediatric dentists more frequently recommended restoring primary teeth with stainless steel crowns. In half the cases, there was no clear consensus as to an optimal treatment.

Additional demographic information, such as dental school and year of graduation, years in practice, and methods of payments accepted, is necessary to identify the specific factors that explain the observed differences in treatment recommendations. A survey designed specifically for pulp therapy is needed to understand the difference in recommendations for pulp treatment be-

tween the two types of practitioners. Additional study is needed to determine whether there are differences in the clinical outcomes (i.e., longevity of restoration, need for retreatment, etc.) of dental treatments provided for children by general dentists and pediatric dentists.

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