Comparison of Nutritional Counseling Between Provider Types

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Abstract

Objective: The goal of this study was to compare the provision of and attitudes toward nutritional counseling between pediatricians and pediatric dentists.

Methods: Questionnaires were mailed to 500 US members of the American Academy of Pediatric Dentistry and the American Academy of Pediatrics.

Results: The survey had a response rate of 33% (pediatric dentists=36%; pediatricians=29%). 84% of pediatricians routinely offered nutritional counseling compared to 71% of pediatric dentists. With respect to cariogenic foods, 82% of pediatric dentists and 74% of pediatricians correctly recommended bottle contents, and 33% of pediatric dentists and 19% of pediatricians correctly recommended snacks. 79% of pediatric dentists compared to 69% of pediatricians believed nutritional counseling had at least some effectiveness. Eighty-nine percent of both specialties somewhat or strongly agreed that nutritional counseling was an important aspect of oral health care.

Conclusions: While pediatric dentists made slightly better recommendations than pediatricians regarding cariogenic foods, both provider types demonstrated a need for more education regarding nutritional counseling. (Pediatr Dent 2006;28:369-374)

KEYWORDS: DIRECTIVE COUNSELING, HEALTH CARE SURVEYS, CROSS-SECTIONAL STUDIES, NUTRITION

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For at least the last 4 decades, diet has been recognized as a factor in the etiology of dental caries.[1-3] Current dental dietary recommendations to reduce caries are multifaceted. One recommendation is to limit refined carbohydrates in children's diets and decrease the frequency of the snacks containing them,[3-6] as they provide an environment encouraging the growth of *Streptococcus mutans,* the bacteria that causes caries.[2,3,7] The rate at which the sugar of various foods is cleared from the oral cavity is also a factor in their cariogenic potential.[3,4] Sticky retentive items such as raisins have more cariogenic potential than sugared drinks that are quickly cleared, for instance.[3,4,6,8] Relatively safe snacks include: (1) cheese; (2) peanuts; (3) milk; (4) sugarless gum; and (5) raw vegetables.[3,4] Items to be particularly avoided include: (1) sugared gum; (2) dried fruits; and (3) sugared soft drinks.[4,8-12]

Parents should also be warned about the caries-producing effects of "natural" and "hidden" sugars in such foods as apple juice, raisins, and ketchup[5] as well as the effect of drinks with a low pH such as Snapple or Mountain Dew.[5,13,14] The lower the pH, the greater the drink's cariogenicity and acidity.

Feeding practices go hand in hand with dietary considerations. Putting a child to bed with a bottle containing anything other than water or giving the child a sippy cup as a pacifier with milk or juice during waking hours may lead to nursing caries.[3,4,6,15,16]

Both pediatricians and pediatric dentists enter a child's life early and can provide appropriate dietary education and recommendations to parents in need of guidance.[5,17] Pediatricians have been urged to counsel parents in dietary and oral hygiene practices that will prevent dental caries and to refer patients for professional dental care when appropriate.[5] Although the American Academy of Pediatric Dentistry (AAPD) recommends that the first dental visit occur by 1 year of age,[18] in actual practice most children do not visit a dentist before 3 years of age.[19,20] For this reason, the pediatrician plays an especially important role in preventive oral health care in early childhood.[7]

Recommendations regarding "healthy foods" provided by pediatricians may not coincide with standard dental recommendations. Gift and Hoeman,[21] for instance, compared dentist and physician attitudes toward the use of dietary fluoride supplements. Results indicated a similarity in attitude of physicians and dentists towards prevention, but a difference in terms of the effectiveness they perceived for specific procedures.

Furthermore, actual clinical support for dietary counseling among either pediatricians or pediatric dentists may be lacking. Of the general dental practitioners interviewed

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To what extent is nutritional counseling offered in your practice? (Nutritional Counseling is defined as offering advice regarding the diet intake and diet habits of a patient) 1) Never 2) Few select patients 3) Routinely {If response is never, please skip down to question # 14}
For which pediatric patients is nutritional counseling performed? (circle all that apply) 1) 0-3 years 2) 4-6 years 3) 6-12 years 4) 13-18 years
In the patient's visit during which you first mention nutritional counseling, how many minutes total do you usually spend discussing this? _____minutes
Do you ask the patients to keep a diary of food/fluids intake for a selected period of time? 1) Yes 2) No If so, do you analyze and discuss it with the patient? 1) Yes 2) No
What type of nutritional counseling do you offer? (Please check all that apply) 1)___Limiting high sugary snacks 2)___Limiting high sugary drinks 3) ___ Recommending Vitamins 4) ___ Other
At what age do you recommend a child stop using the bottle? 1) less than 12 months 2) by 18 months 3) by 24 months 4) by 36 months At what age do you recommend a child to stop using the sippy cup? 1) less than 12 months 2) by 18 months 3) by 24 months 4) by 36 months Please check the contents that you recommend in a bottle/cup to be given to a child who is going to sleep: ____water ____milk ____fruit juice ____soft drinks/soda ____sweetened iced tea ____nothing
Please check all the snacks that you recommend to a parent as OK for their child: ___popcorn ___yogurt ___sucking candies ___pizza ___pickles ___cheese ___raisins ___nuts ___sugared cereal ___fruits ___ honey ___fruit rollups ___pretzels ___milk chocolate ___ice pops ___peanut butter ___dried fruits ___granola bars ___canned fruit ___carrots
Have you ever referred a patient to a nutritionist? 1) Yes 2) No
How effective do you feel nutritional counseling is in reducing dental caries in your patient population? 1) very effective 2) somewhat effective 3) not effective 4) no opinion
Nutritional counseling is an important aspect of oral health care. 1) strongly agree 2) agree 3) neutral 4) disagree 5) strongly disagree

Figure 1. Survey questions related to provision of and attitudes toward nutritional counseling between pediatricians and pediatric dentists.

by Holloway and Clarkson,[22] for example, only 58% perceived a benefit from offering nutritional counseling to their patients' parents. Perhaps this is true of pediatric dentists as well.

A search of the literature yielded few articles in medical and dental journals on prevention and diet modification and none comparing pediatricians and pediatric dentists in this respect. This study's goal was to compare the provision of and attitudes toward nutritional counseling between pediatricians and pediatric dentists.

Methods

A pencil-and-paper questionnaire (Figure 1) was created to explore pediatric dentists' and pediatricians' knowledge and usage of nutritional counseling in their private practice. The study occurred between November 2003 and February 2004. The surveys consisted of specific questions regarding the type of nutritional counseling rendered and the recommendations given to patients. To assess knowledge of the cariogenic potential of foods, some questions asked clinicians to identify types of snacks recommended. Demographic questions concerned: (1) number of years in private practice; (2) presence of hospital or academic affiliations; (3) state and locale type of practice; and (4) number of patients seen per day. The questionnaire was pilot-tested with 12 pediatricians and 12 pediatric dentists at a community dental and outpatient clinic. Ambiguous or confusing questions were rephrased. The final 20-question survey was mailed once with postage-paid return envelopes and a cover letter signed by the primary investigator to 500 private pediatricians and 500 pediatric dentists across the continental United States. Each doctor was asked to return the questionnaire anonymously to maintain confidentiality. The specialists were randomly selected active health care providers from the American Academy of Pediatrics (AAP)[23] and AAPD[24] rosters. The questionnaires were mailed out on two colors of paper to distinguish between the 2 types of health care providers. Once the survey was mailed, respondents were given 3 months to reply (by the end of February 2004).

Each questionnaire was entered into a spreadsheet by one person and cross-checked by a disinterested party to decrease the chance of error. Snacks and beverages that respondents indicated they recommended were compared with published guidelines related to their caries-causing potential[8,9,25] and were scored as either "correct" or "incorrect." Responses were categorized by region:

1. New England (Me, Vt, NH, Mass, RI, Conn);
2. Mid Atlantic (NY, Pa, Md, Del, NJ, DC);
3. South (Va, NC, SC, Fla, Ga, Ala, WV, Miss, La, Ky, Tenn, Ark);
4. Midwest (Ohio, Ind, Ill, Mich, Iowa, ND, SD, Minn, Wis, Mo, Neb, Kan);
5. West (Okla, Tex, Utah, Ariz, Calif, Colo, Mont, Nev, Wyo, NM);
6. Pacific Northwest (Idaho, Ore, Wash); and
7. noncontiguous (Alaska, Hawaii).

Using SPSS 10.1 (SPSS Inc, Chicago, Ill), categorical data of groups were compared using the chi-square test. Continuous variables were compared using student's *t* test. Alpha was set at 0.05.

Results

A total of 325 surveys were returned, resulting in a 33% response rate: 180 (55%) from pediatric dentists and 145 (45%) from pediatricians. The average time that pediatric dentists respondents were in private practice was 17.6 years (±10.9 SD) and pediatricians 18.5 years (±8.4). Sixty-nine percent (124/179) of pediatric dentists were male, whereas 53% (76/144) of pediatricians were male (P=.002). Pe-

diatricians had significantly more academic and hospital affiliations (51% and 93%, respectively, of 145) than pediatric dentists (29% and 69%, respectively, of 180, *P*=.001). Significantly more pediatricians responded from the West region (109, 75% of 145) than from other regions (36, 25% of 145). Pediatric dentists were relatively evenly distributed throughout the country, with 46 (26% of 180) coming from the West region. Overall, pediatric dentists saw more patients per day than pediatricians: 45 (25% of 145) pediatric dentists saw 15 to 25 patients per day, 66 (37% of 145) saw 26 to 40 patients per day, and 60 (33% of 145) saw more than 40. Conversely, 62 (43% of 180) pediatricians saw 15 to 25 patients per day, 57 (39%) saw 26 to 40 patients per day, and 12 (8%) saw more than 40.

Responses related to nutritional counseling (NC) are reported in Table 1. The median amount of time spent when providers first discussed NC was 5 minutes for both pediatric dentists (range=1 to 20 minutes) and pediatricians (range=1 to 30 minutes; *P*=.66). Over two thirds of both pediatricians and dentists stated that they offered NC routinely, but more pediatricians offered NC routinely than dentists (*P*=.02).

More dentists than pediatricians recommended only noncaries-causing snacks[3,4,8,9,16,20,25,26] (ie, popcorn, yogurt, cheese, nuts, fruits, carrots, and milk chocolate). Conversely, more pediatricians recommended 1 or more caries-causing snacks (ie, sucking candies, raisins, sugared cereal, dried fruits, pretzels)[3,4,6,10,27] (*P*=.01). Even so, over two thirds of both specialties recommended at least 1 caries-causing snack. Over 70% of both groups recommended only noncaries-causing bottle or sippy cup contents, but slightly more dentists than pediatricians tended to make the correct recommendation (*P*=.06).

Table 1. Survey Responses Regarding Provision of and Attitudes toward Nutritional Counseling (NC) between Pediatricians and Pediatric Dentists

	Dentist N (%)	Pediatrician N (%)	P
Extent of NC offered			
Never	4 (2%)	2 (1%)	
Few select patients	48(27%)	21 (15%)	.02
Routinely	128 (71%)	122 (84%)	
Total number replying	180	145	
Patient keeps fluids/food diary			
Yes	15 (9%)	55 (38%)	< 0.001
No	162 (91%)	88 (62%)	
Total number replying	177	143	
Age recommended to stop bottle use (mos)			
<12	111 (62%)	52 (36%)	
≤18	59 (33%)	76 (52%)	<.001
≤24-36	9 (5%)	17 (12%)	
Total number replying	175	145	
Age recommended to stop sippy cup use (mos)			
<12	16 (9%)	6 (5%)	
≤18	48 (27%)	21 (16%)	.02
≤24	72 (41%)	62 (47%)	
≤36	39 (22%)	43 (33%)	
Total number replying	175	132	
Bottle contents recommended			
All correct	147 (82%)	107 (74%)	
1 or 2 cause caries	33 (18%)	35 (24%)	.06
≥3 cause caries	0 (0%)	3 (2%)	
Total number replying	180	145	
Snacks recommended			
All correct	59 (33%)	27 (19%)	
1 or 2 cause caries	71 (39%)	73 (50%)	.01
≥3 cause caries	50 (28%)	45 (31%)	
Total number replying	180	145	
Refer to a nutritionist			
Yes	34 (19%)	135 (93%)	<.001
No	146 (81%)	10 (7%)	
Total number replying	180	145	
Effect of NC on your patients			
Very effective	30 (17%)	22 (15%)	
Somewhat effective	112 (62%)	78 (54%)	.007
Not effective	26 (14%)	17 (12%)	
No opinion	12 (7%)	28 (19%)	
Total number replying	180	145	

Some topics discussed during nutritional counseling did not vary by specialty: over 90% of all survey respondents indicated that they recommended vitamins and advised patients to limit sugary snacks and sugary drinks. Several pediatricians wrote in that they discussed obesity with patients; no pediatric dentists mentioned obesity, however.

Three quarters of pediatric dentists and two thirds of pediatricians believed NC to have at least some effectiveness. High percentages (89% of both specialties) somewhat or

strongly agreed that nutritional counseling was an important aspect of oral health care.

More respondents who routinely offered NC were in the West region (54%, 135 of 250 who offered NC routinely; *P*=.01). Dentists who offered NC routinely were distributed evenly throughout the geographical regions. On the other hand, a higher percentage of pediatricians offered NC routinely in the West region (98 of 109, 90%) compared to pediatricians in other regions (24 of 36, 67%) (*p*=0.004). Contrariwise, a lower percentage of pediatricians asked patients to keep a diary of foods/fluids intake in the West region (33 of 108, 31%) compared to other regions (22 of 35, 63%; *P*=.002). Conversely, a lower percentage of pediatricians recommended all bottle contents correctly in the West region (75 of 109, 69%) compared to other regions (32 of 36, 89%; *P*=.04). A trend was found toward a lower percentage of pediatricians recommending all snacks correctly in the West region (16 of 109, 15%) compared to other regions (11 of 36, 31%; *P*=.057). Other questions did not yield statistically significant differences between pediatricians in the West region compared to other regions.

Discussion

While statistically significant differences were found in aspects of NC between pediatricians and pediatric dentists, the 2 groups had many similarities:

1. over 70% of both groups offered NC routinely;
2. over two thirds of each group believed it to be at least somewhat effective; and
3. the great majority of respondents identified NC as important.

Unfortunately, even though the great majority of responders identified bottle/sippy cup contents correctly, over 20% did not. Especially distressing from the point of view of caries prevention, over two thirds of respondents recommended snacks that were caries causing.

Important differences emerged between the specialties. More pediatricians than pediatric dentists offered NC routinely. Pediatricians were more likely to keep a food diary and to refer more children to a nutritionist. These differences perhaps reflect pediatricians' role in monitoring the overall health of children as opposed to primarily their oral health. Most likely because dentists' responsibility does center on oral health, they recommended stopping bottle and sippy cup use at younger ages than pediatricians and were more likely to recommend snacks and bottle contents that do not cause caries.

The pediatric dental literature has a long history of emphasizing the importance of dietary counseling and the avoidance of frequent consumption of refined carbohydrates, both in the past[17] and present.[28,29] Even so, a qualitative study of 50 English dentists[22] demonstrated ambivalence about dietary counseling: only 58% of these dentists believed that offering dietary counseling benefited practice. These 58% were enthusiastic, however, giving dietary counseling great importance. In the present study, a larger percentage believed dietary counseling to be effective and offered it routinely.

Even so, this percentage was less than unanimous. Published studies reflect this ambivalence as well. An evidence-based meta-analysis by Lewis and Ismail[30] indicated that only poor evidence existed that such practices as the following were effective in preventing dental caries:

1. tooth-brushing without fluoride-containing dentifrice and flossing;
2. cleaning of teeth by a dentist or dental hygienist; and
3. dietary counseling.

Preventive treatments such as fissure sealants, oral hygiene demonstrations, and dietary counseling may not reduce the rate of caries because the patient's sugar intake is difficult to control. Prevention of dental caries has relied upon patient cooperation and often requires significant lifestyle changes (eg, rigorous oral hygiene and attention to dietary habits and infant feeding practices) that patients and parents find difficult to implement.[7,11]

Related to NC's effectiveness, a study of 1,450 British preschool children[31] found that regular twice-daily brushing with fluoride toothpaste may do more to prevent caries than restricting sugary foods. In Sweden, a comparison of 4 regimens—including individualized information on diet—found all to have equally low efficiency in adolescents with high caries risk.[32] Given these findings, some recommendations regarding oral health simply sidestep diet by de-emphasizing it compared to risk assessment, fluoride use, and antibacterial therapy.[2,10,11]

Other authors, however, have reported on the positive correlation between amount and frequency of sugar intake and dental caries[14,33] and recommend nutritional guidance.[3] One Swedish trial that included a dietary counseling intervention[34] found that consumption of in-between meals and sweet drinks at night was significantly lower in the intervention group than the control group and that the number of caries-free children in the intervention group more than doubled. Certainly, the literature is clear that nursing and bottle-feeding practices and even the use of the sippy cup can have a devastating impact on caries incidence.[6-8,17,21,25] On balance, the increased understanding of the etiology of dental caries and, thus, of ideas regarding caries prevention and management has resulted in the continued integration of dietary recommendations and nutritional counseling as part of a comprehensive program.[7,35]

Thus, while coordination of efforts to diminish this widespread disease must occur between many health professionals,[36] pediatricians and dentists clearly have important roles to play. Collaboration between pediatric dentists is a 2-way street, with pediatricians perhaps having more to learn about caries prevention and pediatric dentists more to learn about overall nutritional guidelines and such issues as childhood obesity prevention.[35] Similarly, a study of attitudes toward dietary fluoride supplements that included both dentists and pediatricians[21] found that both had strengths and both needed improvement. Encouragingly, improve-

ment in both knowledge and behaviors related to oral health was observed in an instructional session for pediatric faculty and residents that lasted only 1 to 2 hours.[37]

The greater response to the survey of pediatricians in the West region makes this study's findings more difficult to interpret. While more of these pediatricians tended to offer NC routinely, they used food/fluids diaries less often and had less knowledge of correct bottle contents and snacks than did pediatricians who responded from other regions. More pediatricians who received the survey in the West region returned it. Because of this, they may be more representative of pediatricians in general than those responding from the other regions, who may have returned the survey because they were particularly interested in nutrition. This, however, is only conjecture. Because 75% of pediatricians responding were from the West region, it is perhaps fair to say that the study is more of a comparison between West region pediatricians and a national sample of pediatric dentists. While this makes it difficult to reliably generalize this study's findings, they are striking enough to serve as a springboard for further research, perhaps using a different sampling methodology. For instance, phone interviews of pediatric dentists and pediatricians would be more likely to generate a representative national sample than a mailed survey.

This study's limitations are as follows. First, while the response rate of 33% was good for a mailed survey, the authors cannot be sure that the responders were representative of the whole population. This is especially so because most pediatricians who responded came from the West region. If responders tended to be those who had an interest in nutritional counseling, however, concern about lack of knowledge regarding oral health recommendations among pediatric dentists and pediatricians nationally would be even stronger. Second, demographic characteristics of the 2 groups, such as hospital and academic affiliation, clinical setting, and number of patients seen per day, indicate that the dentists and pediatricians were not comparable. Nonetheless, significant variety was present in each group, which hopefully will minimize this issue's importance.

NC is a topic of great importance to a child's oral and overall health. This study's results are positive in that most pediatricians and pediatric dentists believe that nutritional counseling is effective in reducing dental caries and that both strongly agree that nutritional counseling is an important aspect of oral health care. The results seem clear, however, that pediatric dentists could contribute more to the overall health of the child with their NC and that both groups would benefit from strengthening their knowledge of oral health recommendations. If practitioners are better educated, the final benefit accrues to the patient. Both groups would benefit from more education on food and juice recommendations, particularly on the use and discontinuation of the sippy cup and bottle. The pediatric dentist needs to be better educated on nutrition other than snacks and drinks. Pediatric dentists might also be advised on when to refer to a nutritionist and the value of keeping a food diary. Common guidelines from the AAPD and the AAP could be of great help in this endeavor.

Conclusions

Based on this study's results, the following conclusions can be drawn:

1. Pediatric dentists and pediatricians offer different recommendations for nutritional counseling to children. Dentists focused on limiting sugary snacks and drinks, whereas pediatricians mentioned these and also counseled on other aspects of nutritional health.
2. Most pediatricians' responses were from the West region, demonstrating that perhaps the counseling offered is also different across the nation.
3. It is the duty of both practitioners to focus on what is important for the child and to recommend accordingly.

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