



## Parents' Satisfaction With Preventive Dental Care for Young Children Provided by Nondental Primary Care Providers

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### Abstract

**Purpose:** The purpose of this study was to assess parents' satisfaction with the preventive dental care their children received in medical offices.

**Methods:** Caregivers accompanying Medicaid children for their medical visits at 30 practices, with at least 1 physician providing dental services, completed questionnaires just before and 12 months after initial dental care visits. Information at follow-up was obtained on the type of dental services received and parents' satisfaction with this care using questions adapted from the Consumer Assessment of Health Plans Survey. Child, parent, and practice characteristics were used in logistic regression to predict categories representing the least satisfaction.

**Results:** About 92% of 342 parents who recalled at least 1 medical visit with dental care reported that the provider usually or always explained things in a way they could understand, and 84% reported that the provider spent enough time with their child. Seventy-seven percent rated overall dental care greater than 7 on an 11-point scale with 10 indicating the best care. Parents reporting race other than Caucasian or African American, mostly Hispanic or Asian, were the least satisfied with interpersonal aspects of care. Poor child oral health and lack of follow-up preventive dental care were associated with low ratings for communication, time, and overall care.

**Conclusions:** Most parents rated highly their children's preventive dental care. Because it usually is attached to medical visits for other reasons, improvements in dental care quality may require process and systems initiatives that address the delivery of all pediatric care in a patient centered and culturally appropriate manner. (*Pediatr Dent* 2005;27:313-322)

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Dental disease was recently classified as a silent epidemic in the United States.<sup>1-3</sup> Young children are of particular concern because large numbers live in poverty, they depend on adults for care, and they go through different developmental stages rapidly, which provides many—but often times fleeting—opportunities to intervene preventively.<sup>4,5</sup> Dental caries, which is their most common disease, has significant health, social, and economic consequences for the child, the family, and society.<sup>6</sup>

Primary medical care providers have an important role in addressing this health problem, as preschool-aged children make many more visits to medical offices than to dental offices. Medical providers report providing preventive oral health services for their pediatric patients,<sup>7-9</sup> which are supported by several guidelines.<sup>10,11</sup> Physicians and other nondental health care workers increasingly are being called upon to deliver this care as a means of increasing access to preventive dental services.<sup>1</sup> Some emerging evidence suggests they are willing to expand the provision of traditional services and adopt more innovative types of care, such as new fluoride treatments or the provision of emergency treatment services.<sup>12,13</sup>

A statewide program, designed to encourage medical providers to incorporate preventive dental services into their

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practices, has been implemented in North Carolina.<sup>13</sup> Since 2000, Medicaid has reimbursed for dental services as a medical benefit for children up to 36 months of age. Pediatricians and family physicians who are certified through continuing medical education (CME) courses are eligible to receive payment. The benefits package includes not only the traditional services of counseling, risk assessment, screening, and referral, but also application of fluoride varnish to the teeth of these young children.

This type of fluoride product, which can easily be painted onto tooth surfaces, was introduced recently into the US marketplace. It can be used safely in young children and demonstrates substantial effectiveness in caries reduction.<sup>14</sup> Although physicians have prescribed fluoride tablets or drops for home use for years, the hands-on, clinical application of fluoride varnish in the primary medical care setting represents an innovation in pediatric medical care.

During the first 4 years of the North Carolina program, more than 3,000 nondental health care workers were trained. Wide geographic coverage of the state has been achieved, with more than 400 participating practices providing more than 200,000 preventive dental visits for children 0 to 35 months of age. The proportion of 2-year-old children enrolled in Medicaid with a well-child visit who receive preventive services is approaching 40%.

Although physicians are in an excellent position to contribute to the oral health of infants and toddlers, a number of potential barriers exist to the provision of these dental services as well as other types of preventive services in primary medical care settings. Among the most obvious barriers are time constraints, low levels or lack of reimbursement for some types of services, unreasonably high expectations created by guidelines for providing preventive care, and the view by some physicians that various aspects of preventive dentistry are not within their scope of practice.<sup>8,15,16</sup>

Due to these potential barriers to strengthening the delivery of preventive services in primary care practices and the general lack of studies on the effectiveness of physicians in providing dental services, the authors have undertaken a broad-based research agenda associated with implementing the North Carolina program. This agenda focuses on:

1. the most effective methods to train physicians to provide services;
2. the adoption rate once trained;
3. the effects of services on dental outcomes once delivered.

One of several studies undertaken focused on the quality of services provided by physicians and their office staff.<sup>13</sup> Although the quality of dental services provided by nondental health care professionals is largely unknown, indirect evidence suggests that it might fall short of optimal levels to be most effective in the prevention of dental disease. The amount of professional education on oral health is believed inadequate to provide quality oral health care. Additionally, knowledge is lacking in emerging areas of disease etiology and prevention, and practices do not always conform to recommended guidelines.<sup>8,17,18</sup>

The purpose of this study was to assess parents' satisfaction with the preventive dental care their children received from pediatricians, family physicians, and other nondental health care providers participating in the North Carolina Medicaid program. The authors also sought to determine child, caregiver, and practice characteristics predictive of their quality assessments. Caregivers' ratings of their children's care are important because of the evidence indicating a strong effect of interpersonal provider behaviors on caregiver satisfaction and, subsequently, the effects of satisfaction levels on adherence to provider recommendations, care-seeking behaviors, and outcomes.<sup>19-21</sup> Parental satisfaction with services provided through this program is of particular interest because children receive some services parents might not normally expect during medical visits.

## Methods

Information used in this study was collected from caregivers of Medicaid children seeking care at medical practices participating in this Medicaid program, known as "Into the Mouths of Babes" (IMB), and enrolled in a randomized controlled trial to encourage adoption of preventive dental services. Practices that responded to recruitment notices offering the CME course necessary for certification were recruited into the study. This trial tests adoption rates and several other outcomes as a result of 3 interventions with a combination of a 1 1/2-hour enhanced CME course, a telephone learning collaborative, and in-office technical assistance.

Caregivers accompanying children for their medical visits at 30 practices participating in the trial were administered self-completed questionnaires. These were given in the office before the preventive dental visit and by mail at the 12-month follow-up. Parents of children who were 12 months of age at baseline were eligible for enrollment. Following the initial CME, front-office staff were instructed to recruit the first 30 parents with an eligible child making a medical visit.

### Questionnaire development

The baseline and follow-up questionnaires were designed to measure a number of potential determinants of the quality of care in addition to satisfaction. Among these were:

1. caregiver opinions (5 items);
2. knowledge (9 items);
3. oral health practices (10 items), which included questions on diet, fluoride use, oral hygiene practices, and professional dental care use.

These questions were framed by the:

1. content of the educational intervention directed toward the health care professionals;
2. care that the authors expected them to provide as a result of this professional education (screening and referral, counseling, and fluoride varnish application);
3. effects that the authors expected professional practices to have on the parents.

Where possible, the authors used questions developed and tested in other studies of caregivers.<sup>22,23</sup> Sociodemographic characteristics of children and their parents were determined at baseline using guidance from the US Census.

The baseline questionnaire was pilot tested with 10 parents of young child patients at the University of North Carolina at Chapel Hill (UNC) School of Dentistry pediatric clinics. The resulting questionnaire was translated into Spanish and pretested with 5 Spanish-speaking parents of young children getting care at a community health center. The baseline questionnaire had a total of 36 questions and was approved by the UNC Institutional Review Board.

At follow-up, the authors repeated questions from baseline for which they anticipated a change, but also solicited parental assessments of the preventive dental care provided to their children at the initial visit and in any follow-up visits. These assessments included reports of the care that was received and the quality of those services. Quality was determined using 4 items adapted from the Consumer Assessment of Health Plans Survey (CAHPS) 2.0.<sup>24</sup> Two questions were used to determine parents' satisfaction with providers' communication and time allotted to their child's preventive dental visit.

These interpersonal factors are important in counseling parents about the care of their children and are strongly associated with patient satisfaction.<sup>25</sup> Based on the frequency with which the doctor or other health provider "explained things in a way you could understand" and "spent enough time with your child," caregivers responses to questions included "never," "sometimes," "usually," or "always."

Because of significant barriers to dental treatment that exist for Medicaid children targeted by IMB, many families need assistance in finding a dentist.<sup>26</sup> Therefore, the authors asked caregivers if their child's doctor recommended that they take their child to a dentist and, if so, if they received help in finding one. Those who reported that they got help were asked to evaluate its quality on an 11-point scale from 0 to 10, with 0 being the worst help possible and 10 being the best.

Caregivers also provided a global rating of the quality of preventive dental care, with responses provided on an 11-point scale from 0 to 10, with 0 being the worst care possible and 10 being the best. As used in CAHPS, this question is intended to reflect all care provided by a personal doctor or nurse and, in this study, was intended to reflect all preventive dental care provided at the child's initial or follow-up visits.

### Construction of study variables

There is a general paucity of representative data on the quality of health care for children and a lack of previous studies on consumer assessments of the quality of dental care by nondental health care providers. Because of this, the authors consider this study's approach as primarily descriptive of caregivers' quality assessments. The authors,

however, were guided in organizing their variables by those frameworks in which satisfaction is considered an outcome<sup>27</sup> and patient-centered care has a prominent role.<sup>28-30</sup> Suggested risk adjustment variables and empirical findings of surveys of quality of care in children, particularly the recent National Survey of Early Childhood Health, also served as a framework for this study's analysis.<sup>31-33</sup>

Each of the 4 quality-of-care measures was collapsed into categories used in the 2000 National CAHPS Benchmarking Database.<sup>31</sup> The 2 measures on interpersonal factors were trichotomized (never/sometimes, usually, always) for descriptive purposes, as were the ratings for referral and overall care (0 to 6, 7 to 8, 9 to 10). For multivariate analyses, variables were dichotomized using the most negative ratings as the first category and the remainder of the ratings as the second category.

Child, parent, and practice characteristics were considered as predictors of ratings of quality of preventive dental care. Child characteristics include:

1. age at initial visit (less than 12 months, 12 to 23 months, greater than 23 months);
2. sex;
3. 2 measures of oral health status:
  - a. caregiver assessment of oral health (5-item Likert scale from "excellent" to "poor," reclassified into a dichotomous variable as "excellent," "very good," "good" vs "fair," and "poor");
  - b. ever had a toothache ("yes," "no").

Characteristics of the primary caregiver accompanying the child for the initial visit include:

1. age in years;
2. race (Caucasian, African American, other);
3. ethnicity (Hispanic, non-Hispanic);
4. educational attainment (0 to 12 years, more than 12 years);
5. marital status (married or couple, single parent);
6. household size less than 18 years old (1 child, 2 or more children);
7. child care support (none, 1 other adult, 2 or more other adults);
8. 2 measures of dental use (any visits and type of treatment at last visit).

The mean number of correct responses for the 9 knowledge questions was calculated and converted to a percentage score. A composite score for value placed on oral health for the child was constructed as a mean of the 5 opinion questions with Likert-type responses ("very important"=1 to "not important at all"=5). Three caregiver preventive dental practices for the child were assessed as "yes" or "no" (cleans child's teeth, takes child for dental appointments, allows bottle use in bed). Finally, 2 characteristics of medical practices were used:

1. type (pediatric, family medicine);
2. CME group assignment (CME course alone vs CME/learning collaborative/in-office visit; and CME/learning collaborative vs CME/learning collaborative/in-office visit).

### Analysis strategy

Descriptive analyses evaluated bivariate associations between covariates and the 3-category satisfaction measures using chi-square tests of independence. A strategy to develop a parsimonious multivariate model was used because of the small sample size. Covariates were regressed on the “worst” score for each of the quality ratings (ie, “never or occasionally” for the interpersonal ratings and 0 to 6 for the overall ratings) using logistic regression. Because of the small number of children who were referred for dental care, caregiver satisfaction with help received in getting dental care was evaluated only descriptively.

Initial regression models included all covariates associated with at least 1 of the 3 quality measures in bivariate analysis with a *P* value of <.10. Subsequent models tested the effects on the model *R*<sup>2</sup> of adding each of the remaining covariates one at a time. Variables were retained for subsequent evaluation if the value increased by 10% or more.

Final models for the effects of covariates on quality ratings were developed using backward stepwise logistic regression with the selected child, caregiver, and practice characteristics included as potential predictor variables. Caregiver race and educational attainment were kept in all models because of their observed importance as predictors of quality ratings in previous studies. The CME group also was retained because of the importance of controlling for any influence of experimental group assignment on quality ratings. All other variables associated with quality ratings at a significance level of 0.2 or less were included in the final logistic regression model.

No statistical interactions were evaluated in the regression models because of the small sample. All analyses were performed using STATA Release 8 (StatCorp, College Station, Texas) and controlled for the expectation of a positive intraclass correlation among observations within the same practice.<sup>34</sup>

### Results

Follow-up surveys were mailed to 723 of the 810 caregivers enrolled at baseline. Ninety of these were lost to follow-up because they could no longer be con-

Table 1. Summary Statistics for Study Population

Variable	Observations	Mean±SD
<b>Child characteristics</b>		
Age at first visit (in mos)	337	16.43±6.06
Male	340	0.55±0.50
Any dentist use at baseline	338	0.03±0.16
<b>Parent and family characteristics</b>		
Age at first visit (in ys)	332	26.88±7.07
Caucasian	329	0.62±0.49
African American	329	0.31±0.46
Other races	342	0.11±0.31
Hispanic	340	0.07±0.25
Education (13+ ys)	335	0.42±0.49
Married/couple	338	0.62±0.49
1 child in family	333	0.36±0.48
1 adult caregiver in family	339	0.22±0.42
Ever had teeth cleaned	338	0.89±0.31
<b>Parent dental care of child</b>		
Clean child's teeth	340	0.88±0.33
Taken child to dentist between baseline and follow-up	335	0.18±0.38
Use bottle/sippy cup	340	0.56±0.50
<b>Parent values</b>		
Low value	337	0.16±0.37
<b>Parent knowledge</b>		
<80% answers correct	338	0.72±0.45
<b>Child health</b>		
Ever had toothache	340	0.11±0.31
Parent rates child's teeth as “fair” or “poor”	339	0.07±0.26
<b>Practice type</b>		
Family medicine	342	0.03±0.17
<b>Follow-up care</b>		
1 or more follow-up dental visits	342	0.56±0.50
Follow-up dental visits in same practice	342	0.51±0.50

Table 2. Percent Distribution of Preventive Dental Care Provided by Physician or Nurse by Visit Type

Type of care	Initial visit (N=342)			Any follow-up visits (N=191)		
	Yes	No	Don't recall	Yes	No	Don't recall
Talked about screening results	76.8	10.6	12.4	46.6	43.7	9.7
Told whether child needed to see a dentist after screening	49.4	40.1	10.4	39.5	52.6	7.9
Painted fluoride varnish on child's teeth	95.0	3.2	1.7	63.7	30.4	5.9
Advised about care of child's teeth at home	92.2	4.7	2.9	50.9	43.2	5.9

tacted by mail. The final sample included 350 caregivers (55% of those contacted) with both baseline and follow-up questionnaires.

Study population characteristics are presented in Table 1. Children included in the study were young, reflecting study enrollment criteria. Caregivers reported that few had made visits to dental offices at baseline or by follow-up, and 7% had poor dental health. Forty-two percent of caregivers were ethnic minorities, 57% were high school graduates or less, and 37% were single parents. Most of the parents were enrolled from pediatric practices, and 56% of children made 1 or more additional visits during the intervening 12 months between the baseline and follow-up, most to the same practice.

Most parents (95%) recalled that fluoride varnish was used during the initial visit and that oral health counseling (92%) was provided (Table 2). Fewer reported that the provider talked with them about the screening results (77%) or about whether their child needed to have a dental visit based on the screening results (49%). Among those who had a follow-up visit, 70% recalled their child receiving 1 or more of the preventive dental services. The percent of caregivers who received each of the 4 services at follow-up was less than at the initial visit. The frequency with which they were done, however, was in the same relative order (Table 2). Advice during counseling at either visit was provided for:

1. bottle use (88%);
2. child's oral hygiene (60%);
3. food and drinks that cause cavities (68%);
4. fluoride use (supplements=52%; toothpaste=62%);
5. recommended age of first dental visit (65%).

Most (83%) recalled postapplication instructions for fluoride varnish.

Percent distributions for the satisfaction ratings according to categories used for reporting CAHPS data are presented in Figures 1 and 2. Almost 90% of caregivers reported that the doctor or other health care worker always or usually explained things in a way they could understand, and 84% reported that the provider always or usually spent enough time with their child. In rating preventive dental services overall, 53% gave a score falling in the highest category and 24% in the next highest category.

Twenty-two percent reported that a doctor informed them that their child needed to visit a dentist. Of these, 41% (30 of 73) received help in finding a dentist or scheduling an appointment. Those who did receive help, however, rated that help highly with 78% rating it in the middle or highest categories (Figure 2).

A number of child, parent, and practice characteristics were associated with 1 or more of the quality assessments in the bivariate analysis (Table 3). Although not consistent across all quality assessments, the strongest effects were for "other race," "parent values," "parent perception of child's dental health," and "having had follow-up preventive dental services." Regression results predicting the worst category

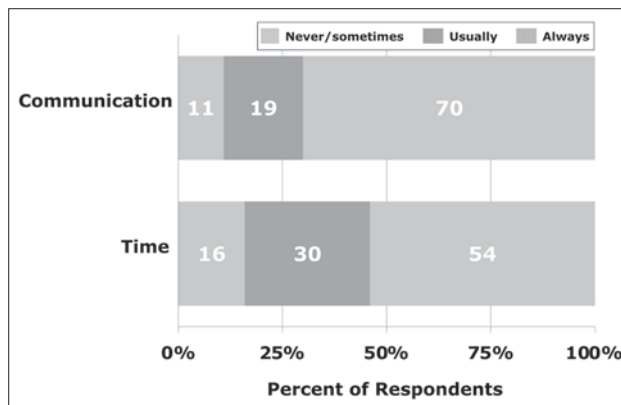


Figure 1. Percent distribution of interpersonal ratings.

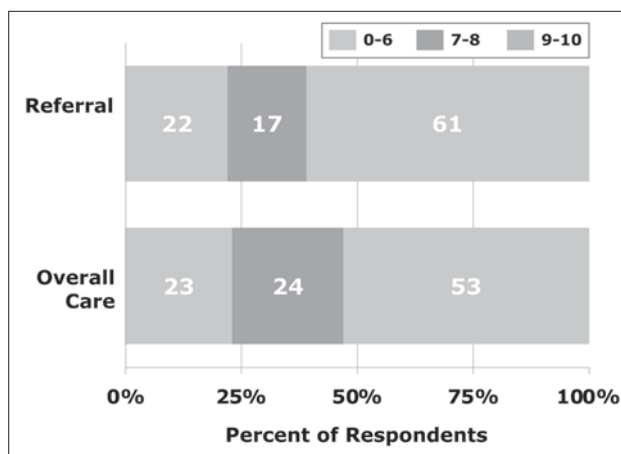


Figure 2. Percent distribution of global ratings for referral and overall care.

of quality scores confirmed most of the associations from the bivariate analysis (Table 4). Compared with Caucasians, parents of other races were greater than 4 times more likely to report that the doctor or nurse never or sometimes explained things in a way they could understand or spent enough time with their child.

Perceived child oral health was associated with communication and time ratings, but were particularly strong for the overall care ratings (odds ratio [OR]=12.37). Those who had follow-up preventive dental care were less likely to rate communication (OR=.16), time (OR=.32), or overall care (OR=.16) low compared to those who did not have follow-up care.

## Discussion

Most caregivers in this study reported high levels of satisfaction with the preventive dental care that their children received in medical offices as part of the North Carolina program. Their ratings of the 2 interpersonal aspects of preventive dental care assessed in this study—percent reporting that the provider usually explained things well enough or spent sufficient time with them—are similar to national data for children 0 to 17 years of age obtained for all types of medical care through the Medical Care Expenditures Survey.<sup>35</sup>

Caregivers' global ratings of preventive dental care also are similar to those provided by caregivers for medical care received by more than 41,000 Medicaid children.<sup>31</sup> These quality scores, reported as part of the 2000 annual report of the national CAHPS benchmarking database, were judged by authors of that report to indicate that consumers generally rated the health care experiences of children highly. The global ratings for dental care obtained in this study also can be compared to those from the National Survey of Early Childhood Health. This is perhaps the best comparison because it provides national estimates for preventive medical services for children younger than 3 and not all types of care for children of a wider age span.<sup>32</sup> The mean rating was 86.9 (SE=6.1) in the national survey, in which responses were converted to a 0 to 100 scale—slightly greater than the 79.3 (SE=1.3) observed in this dental study.

Satisfaction assessments can provide important insights into strategies necessary to improve the quality of care.<sup>36,37</sup> The regression models sought to identify characteristics of children, parents, or practices associated with poor quality of care. Three variables seem particularly important in this regard:

1. race/ethnicity;
2. child's dental health status;
3. follow-up preventive dental care in the medical office.

Caregivers identifying themselves as a race other than Caucasian or African American were much more likely to rate interpersonal aspects of dental care poorly.

This finding is consistent with CAHPS data and results of the National Survey of Early Childhood Health.<sup>32,38</sup> North Carolina has one of the fastest-growing Hispanic populations in the country.<sup>39</sup> Individuals classified as other races within this Medicaid study population—70% of whom were Hispanic or Asian—may have:

1. cultural beliefs and practices that differ from health care workers;
2. language barriers;
3. lower health literacy in general;
4. a lack of familiarity with the US health care system.

Because of these differences, their interactions with health care providers are likely to be less satisfactory. Access to culturally and linguistically appropriate care may be necessary to improve caregivers' satisfaction with their preventive dental care experiences in the primary medical care setting.

**Table 3. Percent Distribution of Child, Parent, and Practice Characteristics by Quality Ratings (N=342)**

Variable	Communication*		Time*		Overall†	
	Usually	Always	Usually	Always	7-8	9-10
<b>Child sex</b>						
Female	15	75	28	60	28	54
Male	22	67	31	49	20	53
<b>Parent race</b>						
Caucasian	16	74	30	58	25	52
African American	22	70	31	53	19	60
Other	22	50§	23	23‡	28	44
<b>Parent education</b>						
0-12	21	66	27	54	23	53
13+	16	78§	34	55	23	55
<b>Household size &lt;18 ys</b>						
1 kid	15	73	29	56	17	56
2 or more kids	22	70	30	53	27	52
<b>Parent values</b>						
Low	24	64	33	41	36	33
Other	17	73	29	57	21	58‡
<b>Child health</b>						
Good, very good, excellent	18	72	29	56	25	55
Fair or poor	23	59	43	29	8	29‡
<b>Practice type</b>						
Family medicine	14	57	13	38	38	38
Pediatric	19	71	30	55§	23	54
<b>Service place</b>						
Same place	18	76	27	59	23	62
Difference places	18	67	33	47	22	35‡

\*Percent for "never" or "sometimes" response category excluded from table.

†Percent for 0-6 response category excluded from table.

‡P<.01.

§P>.01<.05.

||P>.05<.10.

Caregivers who reported that their child's oral health was "poor" or "fair" were more likely to give lower satisfaction ratings for all 3 quality measures than those who reported better oral health for their children. This finding is consistent with CAHPS data and also is in agreement with national data for other types of pediatric health care services.<sup>31,32</sup> Reporting bias can cause this finding, or the quality of preventive dental services actually can be worse for those children in poor dental health. Recent research has found that satisfaction with direct patient care within a health care plan can differ between sick and healthy Medicare patients. This suggests that the quality of patient care for sick and healthy individuals can differ within the same health plan.<sup>40</sup>

Lower satisfaction among parents of children with dental problems is understandable. Doctors may find it difficult

**Table 4. Logistic Regression Model for Likelihood of Dissatisfaction With Preventive Dental Services**

Variable	Never or sometimes explain things so they can understand (N=302)		Never or sometimes spend enough time with child (N=293)		Rate overall care worst (N=304)	
	OR	95% CI	OR	95% CI	OR	95% CI
<b>Child characteristics</b>						
Male			1.67	0.94, 2.95	1.76*	1.03, 2.99
Poor oral health	2.87*	1.03, 7.97	2.62*	1.07, 6.43	12.37*	3.61, 42.29
<b>Caregiver and family characteristics</b>						
African American vs Caucasian	0.85	0.31, 2.31	1.51	0.55, 4.12	0.78	0.39, 1.58
Other race vs Caucasian	4.48*	1.08, 18.59	5.01*	1.32, 19.00	1.19	0.42, 3.36
More than high school graduate	0.43	0.15, 1.16	0.62	0.20, 1.88	1.21	0.58, 2.53
Low value on child oral health			2.74*	1.44, 5.22	1.79	0.85, 3.75
No. of persons <18 ys in household					1.64	0.96, 2.80
<b>Practice characteristics</b>						
Follow-up preventive care in medical office	0.16*	0.07, 0.38	0.32*	0.17, 0.60	0.16*	0.07, 0.39
Public clinic	4.60	0.52, 40.19	10.97*	3.22, 37.31		
CME group A vs C	0.70	0.28, 1.70	0.65	0.22, 1.90	0.72	0.33, 1.53
CME group B vs C	0.31*	0.10, 0.99	0.52	0.15, 1.80	0.51*	0.28, 0.94
	R <sup>2</sup> =0.1822		R <sup>2</sup> =0.1515		R <sup>2</sup> =0.1851	

\*P<.05.

to meet the needs of these caregivers and their children. The knowledge and skills needed to conduct a thorough dental screening and risk assessment and to provide necessary advice for children with dental problems are greater than for healthy children and can take more time. Dental referral services in particular can be difficult and frustrating for both the health care worker and the parent because of the undersupply of dentists who provide dental services for young Medicaid children.<sup>41</sup> This finding suggests that medical offices providing preventive dental services to large numbers of children with dental diseases may need intensive CME and support services to meet their patients' needs.

Lack of follow-up preventive dental care was the final variable found to be of major importance in predicting poor quality ratings. Selection bias could contribute to this finding in that those who are most dissatisfied with these services would be likely to refuse follow-up services or seek care from another doctor. A large body of evidence, however, supports the contention that long-term, person-focused care contributes to improved health outcomes.<sup>42</sup> Concerning preventive oral health care, continuity increases the likelihood that mothers of children less than 3 years of age will receive dental advice during regular patient care in a medical setting.<sup>43</sup> Children in the United States, however, attend fewer than 50% of the recommended well-child visits.<sup>44</sup> Therefore, substantial efforts to address parent dissatisfaction caused by the lack of a long-term relationship with a physician will need to be addressed by broader initiatives that target continuity of care within individual practices and beyond.

About 41% of parents were told that their child needed to see a dentist, of whom only 21% reported receiving any help in scheduling a dental appointment for their child. Of those parents who reported receiving help, the quality of these services was judged to be good by most parents. Due to small sample sizes, the authors were unable to explore the characteristics of those who received help and those who did not. It would seem, however, that the small percentage of parents who received help can be considered a deficiency in the quality of preventive dental services that physicians are providing as part of this program. A previous study of providers in these same practices found that they are more likely to simply tell the parent that their child needs to see a dentist or to provide the name of a dentist than to actually arrange for an appointment with a dentist.<sup>26</sup>

Nationally, about 1 in 5 parents whose child needs to see a medical specialist has problems getting a referral.<sup>30</sup> Nevertheless, physicians may experience more difficulty in working with the dental care system because of their lack of familiarity. Evidence for effectiveness of dental referral by primary care physicians is lacking.<sup>17</sup> From the perspective of parents of young children who received preventive dental care in these practices, however, referral services generally were judged to be of good quality when they received them. Perhaps access to dental care could be improved for the Medicaid child if medical offices provided families with more help in obtaining needed dental services.

The authors are unable to determine whether any of the 3 types of preventive dental services (screening/risk assessment, counseling, fluoride applications) had a larger

influence on the overall rating of these services than others. The application of fluoride varnish is in its early stages of adoption by nondental health professionals, so little information is available on patient acceptance. A study of the satisfaction of dental patients with fluoride varnish compared to traditional gels or solutions found that they preferred varnish.<sup>45</sup> No studies, however, have asked medical patients their opinions about fluoride varnish. The high overall ratings for care found in this study suggest that application of fluoride to the teeth of children in these offices did not substantially affect the perception of quality of preventive dental care provided by these nondental providers.

This study's results suggest that low-income caregivers judge the quality of care to be high, even for a hands-on procedure that traditionally has been done only by dental personnel. The factors that distinguished the 11% to 23% who were dissatisfied with care provide some insights into how quality of care might be improved. Caregivers' satisfaction with communication (correlation coefficient=0.35) and time allotted to dental services (correlation coefficient=0.41) were correlated moderately with the overall global rating. This suggests that, if they were addressed, global ratings would improve as well. Satisfaction ratings measure the patient's cognitive evaluation and emotional reaction, which may be influenced by many factors such as perception of quality, convenience, interactions with the doctor and others, office environment, and anticipated outcome of health care.<sup>46</sup>

A number of factors associated with the use of medical care could be affecting satisfaction with dental care. Improvements in parents' satisfaction with preventive dental care likely will require broader initiatives that address not only the process of pediatric care specifically,<sup>15</sup> but larger systems issues such as access to care, workforce diversity, and cultural competence of health care providers.<sup>30</sup>

## Conclusions

Most parents rated highly the preventive dental care received by their children in medical offices as part of the North Carolina program. Almost 9 out of 10 parents reported that the doctor or other provider usually or always explained things in a way that could be understood and spent enough time with them and their child. Most parents also provided high global ratings for overall preventive dental care.

Due to the fact that dental services in medical offices almost always are provided during medical visits made for nondental reasons, improvements in the quality of dental care may require process and systems initiatives that address the delivery of pediatric care in a patient-centered and culturally appropriate manner.

Finally, physicians who see large numbers of children with severe dental problems may need more professional educational in oral health than those who see healthier children.

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## ABSTRACT OF THE SCIENTIFIC LITERATURE



### SODIUM HYPOCHLORITE'S EFFECTS ON BONDING DENTIN IN PRIMARY TEETH

Dentin bonding is based on the retention achieved when a monomer interlocks with demineralized dentin and forms a hybrid layer upon polymerization. Reducing leakage at this hybrid level would, thus, reduce the chance of composite failure. Some researchers have demonstrated that the use of a sodium hypochlorite rinse after etching can improve dentin permeability of the monomer by the dissolution of collagen fibrils. All studies to date have dealt with permanent teeth. The aim of this study was to evaluate the effects of a 10% sodium hypochlorite (NaOCl) solution on the shear bond strength of 3 different bonding systems in primary dentition.

Forty-five extracted primary molars were longitudinally sectioned, embedded in resin and ground until a dentin surface was reached. The teeth were divided into 6 groups—1 each of 3 different bonding agents with and without a NaOCl rinse. All 3 adhesive systems (Single Bond, Prime and Bond 2.1, Clearfil SE Bond) were applied according to manufacturers directions, with the exception of 3 groups in which a 10% NaOCl rinse was applied between the etching step and application of the bonding agent. All samples had a composite resin applied and were light cured for 20 seconds and stored in distilled water for 24 hours. Shear bond strength testing was employed with failure sites examined by scanning electron microscopy. The results showed no statistical changes between the groups with and without the NaOCl rinse, regardless of the bonding agent used.

**Comments:** The fact that this study addressed primary teeth is certainly of interest to the pediatric dental practitioner. Further studies could be expanded to test the effect of the NaOCl rinse on marginal adaptation and microleakage in primary teeth. Because this study's results did not show any differences with or without the NaOCl rinse, there seems to be no need to add this extra step, particularly in pediatric dentistry where speed and time can be of the essence. **GM**

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