

# Effect of Having a Personal Healthcare Provider on Access to Dental Care Among Children

Amy Brock Martin, Janice Probst, Jong-Yi Wang, and Nathan Hale

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**Background:** The current study examines the relationship between having a personal healthcare provider (PHP) and a child's receipt of dental visits during the preceding year. Whether the PHP relationship ameliorates rural/urban differences among US children was also examined. **Methods:** We conducted a cross-sectional analysis of data from the 2003 National Survey of Children's Health augmented with county-level ecological data from the 2003 Area Resource File. Independent variables were preventive dental visits and any dental visits. Control variables were demographic variables, special healthcare needs, health insurance, dental insurance, and primary care and dental HPSA status. Multiple logistic regression models were used to adjust for covariate effects. **Results:** Children with PHPs were more likely to have received preventive dental care and less likely to have received no dental care at all. Children who lacked PHPs were less likely to have received preventive care and more likely to lack any dental visit. Rural children, regardless of PHP status, were less likely to have received preventive care and more likely to have made no dental visit. **Conclusion:** While having a PHP improves the likelihood a child will have dental visits in a year, the effect is not as strong for rural as for urban.

**KEY WORDS:** dental care for children, personal healthcare provider, rural health

Dental care has the most prevalent unmet health need in children in the United States.<sup>1-5</sup> Untreated dental decay can lead to nutritional deficiencies, exacerbations of medical conditions, pain and infection, missed school and poor concentration, speech and eating dysfunction, low self-esteem, and risks to general health.<sup>1,3-4</sup> While national surveillance has demon-

strated improvements in oral health status for US adults and seniors, results have been mixed for children. Between 1988 and 2004, the rate of dental caries declined in adolescent populations, possibly because of an increase in sealant applications, but rose among young children aged 2 to 5 years.<sup>2</sup>

The prevalence of dental caries has been historically higher among young children who live in poverty, are minorities, and have poor health.<sup>1,3-5</sup> Children from low-income families and from minority groups have been three to five times more likely to experience caries and other oral health problems, while having approximately half the number of dental visits.<sup>1,3-5</sup> Between 1988 and 1994, almost 80 percent of children who were aged 2 to 5 years and lived at or below the federal poverty level did not have their teeth restored.<sup>1</sup>

The American Academy of Pediatric Dentistry, American Dental Association, and Bright Futures have recommended that all children have their first preventive dental visit during the first year of life. The American Academy of Pediatrics (AAP) recommends that pediatric healthcare professionals conduct oral risk

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assessments on all patients at 6 months of age and children at high risk for dental caries be referred to a dentist no later than 6 months after the eruption of the first tooth or by 12 months of age, whichever comes first.<sup>6</sup>

### ● Disparities in Access to Dental Care

Children who are poor, are of minority race, have less educated parents, and live in rural places have been disadvantaged with regards to oral health.<sup>7-9</sup> Minority children have been less likely than white children to have dental insurance, and less likely to receive preventive dental care, regardless of insurance status.<sup>7,8</sup> Risk factors for failure to receive preventive dental care have been documented as age less than 6, Black or multiracial background, and poverty.<sup>10</sup> Among protective factors, children who lived in states where State Child Health Insurance Program dental coverage and income eligibility were most inclusive were more likely to have received preventive dental visits.<sup>10</sup>

Although the literature is sparse on disparities in oral health status for rural children, evidence suggests that they have compromised access to dental services and markedly less dental service utilization than their urban peers.<sup>8,9</sup> Rural children live in areas where there are shortages of both pediatric and general dentists.<sup>9,11</sup> In 2005, nearly three out of four dental health professional shortage areas (HPSA) were in rural areas.<sup>12</sup> Rural children have been less likely to receive preventive dental care or have dental insurance than urban children.<sup>8,10</sup> Rural children have also experienced transportation barriers and limited access to fluoridated water systems.<sup>12</sup>

Although the first dental visit is recommended when a child is approximately 1 year old, 49 percent of 2- to 5-year-old children had never seen a dentist between 1999 and 2004.<sup>13</sup> General dentists have been reluctant to care for very young children. A 2003 national study found that only 15 percent of responding dentists felt that 12 months is an appropriate age for the first dental visit and 53 percent were aware of the recommendation of first dental visit by age 1. In addition, nearly 70 percent of general dentists did not treat 6- to 18-month-old children, and 28 percent did not treat children 19 months to 3 years of age.<sup>14</sup> These findings are corroborated in a 2005 study that found nearly 50 percent of general dentists often or always referred children younger than 3 years to pediatric dentists.<sup>15</sup>

### ● Relevance of Primary Care to Oral Health

Primary care providers have been vital entry points to dental care, because they have been the providers

most likely to be encountered by children.<sup>11</sup> Lacking a primary care provider is a risk factor for failing to receive dental preventive care.<sup>10</sup> The relationship between primary care and oral health has been supported through Early Periodic Screening Diagnosis and Treatment through Medicaid, which has called for oral screening examinations by primary care providers as a part of a well-child visit.<sup>16</sup> It was suggested in 2000 that strengthening the primary care provider role in preventive oral healthcare will improve oral health status and access to care for children.<sup>16</sup>

Improved coordination and referrals among medical and dental providers have also been recommended to improve children's oral health.<sup>17</sup> In a 2004 survey of North Carolina physicians, more than three of four physicians reported that they were likely to make dental referrals for patients exhibiting early symptoms or risk of childhood caries.<sup>11</sup> This study also found that availability of dentists was a strong component of referral behavior; the "referral environment" had greater value in predicting whether a physician would make a dental referral than physician or patient characteristics.<sup>11</sup> However, a 2000 national survey of physicians found that 55 percent of respondents encountered difficulties in making referrals to dentists for their uninsured pediatric patients. Another 38 percent reported the same for their patients enrolled in Medicaid.<sup>16</sup>

### ● Purpose of the Study

The current study examines the relationship between having a personal healthcare provider (PHP) and a child's receipt of preventive dental visits or any dental visits during the preceding year. We also examine whether the PHP relationship ameliorates rural/urban differences among US children. The study builds on previous analyses, which examined disparities in dental insurance, service utilization, and unmet need among children, by including PHP status as it relates to dental care utilization.<sup>8</sup>

### ● Methods

#### Data source and study population

We conducted a cross-sectional analysis of data from the 2003 National Survey of Children's Health (NSCH). The NSCH, conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention, provides information regarding a nationally representative sample of US children. The survey was administered through computer-assisted telephone

interviews with parents or guardians.<sup>18,19</sup> Information was obtained on 102 353 children.

The 2003 Area Resource File (ARF), prepared annually by the Health Resources and Services Administration, was used to provide ecological context to the NSCH data. ARF is a county-specific database that contains information on a cadre of information useful to health planners, policy makers, and researchers such as healthcare facilities, healthcare workforce, health status, and health training programs. It also provides demographic, geographic, and socioeconomic indicators for each county in the country. The ARF is a synthesis of data from more than 50 secondary sources including Census, Centers for Medicaid & Medicare Services, the National Center for Health Statistics, and professional organizations such as the American Hospital Association.<sup>20</sup>

The present study excluded children younger than 1 ( $n = 5\,873$ ), children with missing data on study variables ( $n = 3\,763$ ), and children whose county of residence data in the NSCH could not be matched to the ARF to ascertain ecological variables (1 021). Because income data were missing in more than 20 percent of records, observations without these data were retained by creating a dummy category of “missing” for use in analysis. The final analysis was based on 91 696 children. Human subjects approval for this secondary research was obtained from the organization’s institutional review board.

### Theoretical framework

The study employed Aday and Andersen’s<sup>21</sup> health behavior model, which posits that health services utilization is dependent on an individual’s predisposition, enabling factors, and need for services. In our model, predisposing factors include age, gender, race/ethnicity, and parental education. Need includes special healthcare need status. Enabling factors include income level, dental insurance, and ecological variables (rural vs urban, region, and HPSA designation).

### Dependent variables

Preventive dental visits and any dental visits were the outcomes of interest. Parents were asked, “About how long has it been since [the child] last saw a dentist? Include all types of dentists, such as orthodontists, oral surgeons, and all other dental specialists.” Responses were dichotomized as either having seen or not seen a dentist of any type in the previous 12 months. Preventive dental care was examined on the basis of parental responses to the question “During the past 12 months/Since [his/her] birth, did [the child] see a dentist for any routine preventive dental care, including

checkups, screenings, and sealants?” Responses were dichotomized as yes or no.

### Independent variables

Whether the child has a PHP was coded as “yes” or “no,” based on answers to the following question: “Do you have one or more persons you think of as [the child]’s personal doctor or nurse?” A child’s residence was considered “urban” if the child lived in a county within a metropolitan statistical area; otherwise, rural.

### Control variables

To allow the effects of a PHP to be distinguished from correlates, factors related to PHP status were held constant in multivariate analysis. Characteristics of the child included age (1–5, 6–11, and 12–17 years), sex, and race/ethnicity, categorized as Hispanic, non-Hispanic white, non-Hispanic African American, or non-Hispanic other (subsequently: Hispanic, white, black, and other, respectively).<sup>19</sup> Children with special healthcare needs (CSHCN) status was included because of heightened dental needs among such children.<sup>9</sup> A child was categorized as CSHCN if one of five long-term circumstances (>12 months) was present: need for medication; above average need for medical, mental health, or educational services; limitation in ability to do age-appropriate activities; need for special therapy; and/or emotional, developmental, or behavioral problems. Financial access was measured by whether the child had healthcare insurance (public, private, none) and by whether the child had insurance for dental care (yes/no). Dental insurance status is dichotomized, rather than categorized similar to healthcare insurance, because the NSCH does not ask dental insurance type, as it does for healthcare.

Characteristics of the family included household income (<200%, 200%–400%, and >400% of the federal poverty level) and highest level of parent education (high school graduate or less vs college or more).

Ecological factors included region of the country (Northeast, Midwest, South, and West), rural/urban status, and availability of healthcare professionals. Availability of professionals was measured on county-level primary care and dental HPSA designations (whole county, partial county, and no designations). All county-level data were drawn from the ARF.

### Statistical analysis

Because county of residence is not provided in the NSCH public use dataset, analyses were conducted at the Research Data Center of the National Center for Health Statistics. All analyses employed sampling

weights to reflect the complex survey design and were performed in SAS-callable SUDAAN.<sup>22</sup> Multiple logistic regression models were used to adjust for the effects of the covariates. All testing was two sided and conducted at  $\alpha = .05$ .

## ● Results

Characteristics related to whether a child had a PHP are shown in Table 1. Children living in rural areas were significantly, albeit slightly, less likely than

**TABLE 1 ● Factors associated with lack of a PHP, children aged 1 to 17 years, National Survey of Children's Health, 2003**

	All children			Rural children			Urban children		
	Children without a PHP, %	SE	P	Children without a PHP, %	SE	P	Children without a PHP, %	SE	P
Total (90 662 unweighted observations)	16.3	0.2		15.2	0.4		16.5	0.3	.0058
Age, y			<.001			<.001			<.001
1–5	15.3	0.5		13.8	0.8		15.6	0.5	
6–11	15.3	0.4		14.5	0.7		15.4	0.5	
12–17	18.1	0.4		16.7	0.7		18.4	0.5	
Race			<.001			<.001			<.001
Hispanic	31.9	0.8		28.6	2.0		32.2	0.9	
White	10.6	0.2		11.9	0.4		10.2	0.3	
Black	22.5	0.8		24.5	1.7		22.2	0.8	
Other	16.5	1.1		24.8	1.9		15.3	1.3	
Sex			.5027						.7190
Men	16.5	0.3		15.6	0.6		16.6	0.4	
Women	16.1	0.3		14.7	0.6		16.4	0.4	
Children with special healthcare needs			<.001			<.001			<.001
Yes	9.8	0.4		9.5	0.7		9.9	0.5	
No	17.8	0.3		16.5	0.5		18.1	0.3	
Poverty, %			<.001			<.001			3.0 <.001
<200	25.2	0.5		19.3	0.7		26.8	0.6	
200–400	11.5	0.3		11.7	0.6		11.4	0.4	
400+	7.4	0.3		7.7	0.7		7.4	0.3	
Missing	22.1	1.0		19.8	1.6		22.5	1.2	
Highest education in household			<.001						<.001
College or more	11.4	0.2		11.9	0.5		11.3	0.3	
Insurance			<.001			<.001			<.001
Private	10.7	0.2		11.6	0.5		10.5	0.3	
Public	21.7	0.6		17.7	0.8		22.8	0.7	
None	42.3	1.1		29.4	1.7		45.2	1.3	
Dental insurance			<.001			<.001			<.001
Yes	13.6	0.3		13.2	0.4		13.7	0.3	
No	25.6	0.6		20.8	0.9		26.8	0.7	
Rurality			.0058						
Rural	15.2	0.4		NA			NA		
Urban	16.5	0.3		NA			NA		
Primary care shortage area			<.001			.6343			<.001
The whole county	16.5	0.9		15.9	0.9		17.1	1.5	
One or more parts	17.3	0.3		15.2	0.6		17.6	0.3	
None of the count	13.3	0.4		14.8	0.7		12.9	0.5	
Dentists shortage area			<.001			.1230			<.001
The whole county	18.7	1.3		17.5	1.2		20.3	2.5	
One or more parts	17.7	0.3		14.7	0.6		18.3	0.4	
None of the count	14.2	0.3		15.2	0.6		13.9	0.4	

Abbreviation: PHP, personal healthcare provider.

**TABLE 2 • Relationship between PHP status and receipt of dental services**

	All children			Children with PHP			Children with no PHP		
	%	SE	<i>P</i> , urban/rural	%	SE	<i>P</i> , urban/rural	%	SE	<i>P</i> , urban/rural
Receipt of preventive care			<.0028			<.0001			.2933
All children	73.1	0.3		75.9	0.3		59.0	0.8	
Rural children	71.7	0.5		73.6	0.5		60.6	1.5	
Urban children	73.4	0.3		76.3	0.3		58.7	1.0	
No dental visit			.0378			.0005			.1552
All children	21.8	0.3		19.9	0.3		31.9	0.8	
Rural children	22.7	0.5		21.4	0.5		29.9	1.4	
Urban children	21.6	0.3		19.5	0.3		32.3	0.9	

Abbreviation: PHP, personal healthcare provider.

urban children to lack a PHP (Table 1). Overall, children living in whole or part county primary care or dental professional shortage areas were more likely to lack a PHP than children living in counties that included no shortage areas. However, this effect was only significant among children living in urban counties.

Most family and child characteristics related to having a PHP were similar for rural and urban children. Preadolescent children (aged 1–11) were less likely to lack a PHP than adolescent children (aged 12–17). CSHCN were less likely to lack a PHP than children without these needs. Poverty, low parental education, and non-white race/ethnicity were all associated with lacking a PHP. Nearly a third of Hispanic children (31.9%) did not have a PHP. Children with private health insurance were least likely to lack a PHP, while children without health insurance were most likely not to have a PHP. Similar effects were found for dental insurance; children with this coverage were less likely to be without a PHP.

Children who had a PHP were more likely to have received preventive dental care, and less likely to have received no dental care at all, during the preceding year (Table 2). Rural children were slightly less likely to have received preventive services and more likely to have had no dental care within the past year than urban children. Among children who have a PHP, rural children were slightly less likely than urban children to have received preventive care (73.6% vs 76.3%;  $P < .001$ ) and slightly more likely not to have received any care (21.4% vs 19.5%;  $P < .001$ ). Rural/urban differences were not significant among children who lacked a PHP.

In multivariate analysis, children who lacked a PHP were less likely to have received preventive care (adjusted odds ratio [AOR] = 0.62, 95% confidence interval [CI] 0.57–0.68) and more likely to lack any dental visit during the preceding year (AOR = 1.52, 95% CI 1.38–1.68; Table 3). Similarly, rural children, all things held equal, were less likely to have received preventive care

(AOR = 0.92, 95% CI 0.85–0.98) and more likely to have made no dental visit (AOR = 1.09, 95% CI 1.01–1.17; Table 3). Other factors associated with receipt of preventive care included the child's age, sex, and CSHCN status. Lack of financial and educational resources lowered the likelihood that a child would receive preventive services. Primary care or dental shortage status was not associated with the receipt of preventive services. Similar patterns were found when examining factors associated with lack of any dental care.

Given its importance as a correlate of receipt of dental services, we examined factors associated with the likelihood that parents would report that their child has a PHP (Table 4). Rural residence was not associated with the likelihood that a child would have a PHP in adjusted analysis (Table 4); the slight protective effect found in bivariate analysis (Table 1) was no longer present. Children living in whole county primary care shortage areas were more likely to report that they had a PHP than other children. Dental shortage status was not associated with having a PHP. Characteristics of the child associated with having a PHP included age (younger rather than adolescent), race (non-white less than white children), and special needs status. Children from poor and less educated families were less likely to have a PHP than from higher-resource families. Privately insured children were more likely, and uninsured children less likely, than those children with public insurance to have a PHP.

## ● Discussion

The current study appears to corroborate previous research that showed having a PHP can improve access to dental care for children, including CSHCN.<sup>16,23</sup> Children with a PHP were more likely to have received preventive dental services and less likely to lack any dental care during a 12-month period in both raw and adjusted

**TABLE 3 ● Adjusted odds ratios, association of PHP, and other child and family characteristics with receipt of preventive dental services and failure to receive any dental services in the past year**

	Receipt of preventive care, 95% CI				No dental visit in past year, 95% CI			
	AOR	UB	LB	P	AOR	UB	LB	P
PHP (referent: yes)				<.0001				<.0001
No PHP	0.62	0.57	0.68		1.52	1.38	1.68	
Residence (referent: urban)				.0164				.0277
Rural	0.92	0.85	0.98		1.09	1.01	1.17	
Age (referent: 12–17), y								<.0001
1–5	0.20	0.18	0.21	<.0001	6.51	6.01	7.05	
6–11	1.30	1.20	1.40		0.80	0.73	0.88	
Race (referent: white)				<.0001				<.0001
Hispanic	0.86	0.78	0.95		1.08	0.97	1.20	
Black	0.70	0.64	0.78		1.28	1.14	1.42	
Other	0.69	0.59	0.79		1.33	1.14	1.54	
Sex (referent: men)				.0041				.0095
Women	1.09	1.03	1.16		0.92	0.86	0.98	
Children with special healthcare needs (referent: no)				.0010				.0208
Yes	1.15	1.06	1.26		0.90	0.82	0.98	
Health insurance (referent: public)				<.0001				<.0001
Private	1.00	0.92	1.10		1.07	0.97	1.18	
None	0.63	0.55	0.72		1.67	1.45	1.92	
Dental coverage (referent: yes)				<.0001				<.0001
No	0.46	0.42	0.49		2.10	1.94	2.27	
Poverty (referent: 400%+ FPL), %				<.0001				<.0001
<200	0.54	0.49	0.59		1.67	1.50	1.84	
200–400	0.77	0.71	0.84		1.21	1.12	1.32	
Missing	0.68	0.60	0.77		1.47	1.29	1.68	
Highest education (referent: college or more)				<.0001				<.0001
High school graduate or less	0.69	0.64	0.74		1.28	1.18	1.38	
Primary care shortage area 2002 (referent: none)				.4228				.1230
Whole county	0.99	0.86	1.13		0.91	0.78	1.06	
Part county	0.95	0.88	1.03		1.05	0.96	1.13	
Dental shortage area 2002 (referent: none)				.0629				.4510
Whole county	1.25	1.04	1.51		0.90	0.74	1.10	
Part county	1.02	0.95	1.1		0.96	0.89	1.04	

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; FPL, . . .; LB, . . .; PHP, personal healthcare provider; UB, . . .

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analysis. Nationally, 16.3 percent of children lack a PHP, placing them at higher risk for missed dental care. The exact mechanism linking medical and dental services is unclear. Parents who report a PHP for their children may be more linked to the healthcare system in general, making this variable a proxy for parental knowledge and engagement. It is also possible that physicians and other healthcare providers communicate the importance of dental care to parents during well-child visits or subsequent to examination of the children's teeth. Rural children, regardless of PHP status, were less likely to have received preventive care and more likely to have made no dental visit during a year. This

effect persisted with PHP status held constant; rural children remained slightly disadvantaged.

Our analysis of the factors associated with parental report of a PHP for their child are consistent with other research suggesting that income, insurance, and special needs status are positively associated with having a PHP.<sup>8,24,25</sup> While rural residence was not associated with having a PHP, adjusted analysis demonstrated parents living in whole county primary care shortage areas were more likely to report a PHP for their child. This suggests that caution must be used in interpreting what a PHP means in areas where the number of practitioners is constrained in relation to population. It

**TABLE 4 • Adjusted odds that a child will have a primary personal healthcare**

	95% confidence interval			P
	Adjusted odds ratio	LB	UB	
Residence (referent: urban)				.1373
Rural	1.07	0.98	1.16	
Age (referent: 12–17), y				<.0001
1–5	1.41	1.29	1.54	
6–11	1.31	1.20	1.42	
Race (referent: white)				<.0001
Hispanic	0.51	0.46	0.56	
Black	0.56	0.50	0.62	
Other	0.66	0.56	0.77	
Sex (referent: men)				
Women	1.06	0.99	1.14	
Children with special healthcare needs (referent: no)				<.0001
Yes	1.84	1.66	2.05	
Health insurance (referent: public)				<.0001
Private	1.21	1.09	1.34	
None	0.46	0.40	0.52	
Dental coverage (referent: yes)				
No	0.74	0.67	0.81	
Poverty (referent: 400%+ FPL), %				<.0001
<200	0.91	0.80	1.03	
200–400	1.40	1.23	1.60	
400	1.88	1.63	2.17	
Missing	1.00	1.00	1.00	
Highest education (referent: college or more)				
High school graduate or less	0.66	0.61	0.71	
Region (referent: Northeast)				<.0001
Midwest	0.75	0.67	0.84	
South	0.66	0.59	0.74	<.0001
West	0.58	0.51	0.66	
Primary care shortage area 2002 (referent: none)				.0256
Whole county	1.23	1.06	1.43	
Part county	1.03	0.94	1.13	
Dental shortage area 2002 (referent: none)				.2179
Whole county	1.05	0.87	1.27	
Part county	0.94	0.86	1.02	

is common for rural areas to have only one provider whom residents identify as their usual source of care, even though many years may pass without any health-care visits.

There are several limitations to the study. While the NSCH is a large-scale survey, it has a modest response rate (55%) with the potential for underrepresentation of children from minority races/ethnicities. Underrepresentation of households lacking landlines, because they either have no telephone or use cell phones only, is a systemic bias of the NSCH. Second, outcome variables are based on parental reporting, which is subject to recall bias and relevant subjectivity, rather than service claims or patient records. Third, the quality of the PHP cannot

be ascertained through the data source. The definition of PHP is based on an affirmative response to one question in the NSCH that asks parents whether their children have one doctor or nurse they usually visit when their children need healthcare. As noted, answers to this question may reflect medical resource constraints as well as parental choice of provider.

Despite its limitations, the study yields relevant findings for public health leaders tasked with addressing the oral health status of rural America. First, we note that disparities in care experienced by rural children persisted even after PHP status was held constant. Thus, additional solutions are needed to help this population. The National Rural

Health Association<sup>12</sup> (NRHA) and the National Conference of State Legislatures<sup>26</sup> (NCSL) offered specific recommendations in 2005 and 2003, respectively, on how to improve oral health in rural America. Both entities supported creating a pipeline of dental providers who encourage rural practice. Specific recommendations to clinical education programs included requiring dental residencies or clinical rotations in rural areas and actively recruiting students from rural communities, or those who demonstrate a commitment to underserved areas, to their programs. Loan repayment, scholarship programs, and other incentives in exchange for service in underserved areas were supported by both the NRHA and the NCSL.<sup>12,26</sup> They also asserted that providing a US license to foreign dental students who have done their residency training in the United States in exchange for service in rural areas and waiving liability for retired dentists who opt to volunteer in safety net settings, such as community health centers or mobile units, improves access.<sup>12,26</sup> Dental workforce development is addressed by federal and state partners. Organizations such as Area Health Education Centers, State Offices of Rural Health, and State Offices of Primary Care, partner on recruitment and retention initiatives that encourage healthcare professionals to consider practicing in underserved areas.

Promoting school-based oral health programs, especially those that target low-income children, was also recommended by the NRHA and the NCSL.<sup>12,26</sup> This recommendation addresses our finding that poverty, lack of insurance, and low parental education have deterrent effects on access to oral care. Many states receive federal funding or have local partnerships for the implementation of school-based oral health programs. Our findings show that adolescents (12–17 years) were less likely than younger children to receive preventive oral health services. Therefore, school-based programs should consider the physiological and psychological changes that occur as children mature so that their oral health needs continue to be met beyond early childhood.

The NCSL recommended that states consider licensing arrangements that facilitate the provision of care in public health settings, such as schools, by dental hygienists to improve access to dental care for low-income, underserved children.<sup>26</sup> States' dental practice acts delineate the parameters of practice by dental hygienists. Using data from 2001, the National Center for Health Workforce Studies at the School of Public Health at the University at Albany examined aspects of the states' dental practice acts for dental hygienists. A white paper was produced that suggested a positive relationship between dental hygienists' autonomy and access to dental care.<sup>27</sup>

The NRHA and the NCSL supported integrating oral healthcare into medical settings, such as expansion of services in community health centers, in order to reach children who otherwise would go without dental care. As community health centers expanded between 2001 and 2004, the number of dental encounters rose by 58 percent and 240 new dentists were employed.<sup>28</sup>

The NRHA and the NCSL called for state Medicaid programs to reassess their reimbursement policies and provider enrollment procedures so as to provide incentives for dentists and physicians to meet the dental needs of underserved children.<sup>12,26</sup> The NCSL also recommended that pediatricians and other primary care providers receive training on oral health assessments.<sup>12,23</sup> The AAP has assumed a leadership role in encouraging medical providers to have an active role in children's oral health. Through the AAP Oral Health Initiative, they have made available on their Web site continuing medical education materials on oral health risk assessments and are sponsoring National Oral Health Symposia.<sup>29</sup>

## ● Conclusion

Early intervention is necessary to reduce the risk for and progression of childhood caries. Because medical providers have more consistent access to children and have significant influence in shaping their health, physician-dentist-parent partnerships are essential in impacting the oral health of children.

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