Association Between Parents' and Children's Use of Oral Health Services

WHAT'S KNOWN ON THIS SUBJECT: A few localized studies have identified positive associations between parents' and children's dental use patterns.

WHAT THIS STUDY ADDS: Parents who do not obtain dental care for themselves are less likely to bring their children in for dental care.

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KEY WORDS
children, parents, oral health services, dental use, NHIS

ABBREVIATIONS
NHIS—National Health Interview Survey
FPL—federal poverty level
OR—odds ratio
CI—confidence interval

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This work was presented in part at the annual meetings of the Pediatric Academic Societies; May 2–5, 2009; Baltimore, MD.

www.pediatrics.org/cgi/doi/10.1542/peds.2009-1417

doi:10.1542/peds.2009-1417

Accepted for publication Sep 2, 2009

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PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: *The authors have indicated they have no financial relationships relevant to this article to disclose.*

abstract

OBJECTIVE: Several parental factors influence children's use of oral health services. Some localized studies have shown that children's dental use patterns correlate positively with those of their parents. The objective of this study was to investigate associations between parents' and children's oral health–seeking behaviors among a representative sample of US children.

METHODS: We used the 2007 National Health Interview Survey to analyze a sample of children aged 2 to 17 years, matched with 1 parent. Using logistic regression, we examined associations between parents' and children's use of dental services and deferred dental care because of cost.

RESULTS: The sample included 6107 child–parent pairs. Overall, 77% of children and 64% of parents had a dental visit in the previous 12 months. Adjusting for sociodemographic and use variables, children were more likely to have a dental visit when their parents also had a dental visit (adjusted odds ratio: 3.36 [95% confidence interval: 2.71–4.18]), compared with children of parents who did not have a dental visit. In addition, compared with children of parents who did not defer seeking dental care, children of parents who deferred their dental care because of cost were more likely to have care deferred because of cost as well (adjusted odds ratio: 12.47 [95% confidence interval: 9.09–17.11]).

CONCLUSIONS: Parental oral health–seeking behaviors for themselves may have an important effect on oral health–seeking behaviors on behalf of their children, regardless of the child's insurance status. Comprehensive strategies to eliminate barriers that target parents and not just children may help to address children's underuse of oral health services. *Pediatrics* 2010;125:502–508

Dental caries is one of the most prevalent chronic diseases of childhood in the United States.[1,2] The burden of dental caries disproportionately affects minority and low-income children, yet they are less likely to use oral health services, especially for preventive dental care.[3] In 2006, ~55% of children who were younger than 21 years did not have a dental visit in the previous 12 months.[4]

Various barriers to access contribute to children's underuse of oral health services. Children without dental insurance coverage are less likely to receive recommended dental visits compared with their privately or publicly insured peers.[5,6] In addition, lack of health insurance in general is associated with less likelihood of having a dental visit.[7]

Strategies to improve access to dental care have increased rates of use of dental services across all income groups but have not eliminated gaps in use between poor and nonpoor children.[8] Most low-income children who are enrolled in Medicaid do not receive recommended dental visits each year, despite having dental coverage.[9]

Some known factors that contribute to inadequate access include an inadequate total supply of dentists who treat Medicaid-enrolled children; geographic maldistribution of dentists; and oral health–related knowledge and attitudes.[10] Additional factors that are known to be associated with use of oral health services include the child's age, race, country of birth, and well-child visit history.[11,12] Beyond these child factors, other parent (eg, education level, age, nativity) and household (eg, family structure and size, language spoken at home, area of residence) factors have been identified as important determinants of children's use of oral health services.[11–15]

A broader, multilevel perspective could shed more light on the complex interplay of factors that influence children's (under)use of oral health services and help to inform development of new strategies that will eliminate persistent disparities. A recent approach has been to explore links between children's and parents' use and access to oral health care. Enabling or predisposing determinants of use of oral health services among adult caregivers could influence use of oral health services for children within the household. Grembowski et al[13] reported that in Washington state, young children of black and Hispanic mothers who were insured by Medicaid had higher dental care use when their mothers had a regular source of dental care. A cross-sectional study among low-income black children in Detroit found that parents who had preventive dental visits were 5 times as likely to take their children for dental visits when compared with parents who had never been to a dentist or had sought dental care only for treatment.[16]

A few other localized studies have also identified associations between parents' and children's dental use patterns.[17–19] We could not identify any studies that explored these associations by using a nationally representative sample of all US children. Our study aim was to investigate associations between parents' and children's use of oral health services among a representative sample of US children, controlling for multiple potentially confounding factors. We sought to understand whether parental behavior regarding their own dental care (as measured by parental dental use patterns) might influence their decision to seek or defer dental care for their children. We hypothesized a positive correlation between parents' and children's oral health care–seeking behaviors.

METHODS

Data Source

We used the 2007 National Health Interview Survey (NHIS) and its Child Health Supplement for our analysis. The NHIS is a cross-sectional survey that provides national estimates of health care use and access for the civilian, noninstitutionalized population of the United States. Information for the Child Health Supplement for children who are younger than 17 years is obtained during an in-home interview with a knowledgeable adult (typically the parent or guardian) in the household. The total household response rate for 2007 was 87.1%.[20] This study was considered exempt in review by the Partners Health Care institutional review board.

Sample

We matched children who were aged 2 to 17 years with the sample parent interviewed for the survey by using the household and family serial numbers. Only data for matched child–parent pairs with available data for dental visits were analyzed. We excluded children when the matched survey respondent was not a parent.

Dependent Variables

Child Dental Visits

We derived this variable from the NHIS question, "About how long has it been since [X] last saw a dentist?" We dichotomized the variable on the basis of the child's use of oral health services in the previous 12 months (0 vs ≥1 visit).

Deferred Child Dental Care Because of Cost

We derived this variable from the NHIS question, "During the past 12 months, was there any time when [X] needed 'dental care (including checkups)' but didn't get it because you couldn't afford it?" We dichotomized responses as yes/no.

Primary Independent Variables

Parent Dental Visits

Parents were asked a similar question about their dental visits in the previous 12 months (dichotomized to 0 vs ≥1 visit).

Deferred Parent Dental Care Because of Cost

Parents were asked a similar question about their deferral of dental care in the previous 12 months because of cost (dichotomized to yes/no).

Model Covariates

We included a number of child and family variables that are known from previous research to influence child and adult dental use. We used the Aday and Andersen[21] model to categorize covariates as enabling, predisposing, and need-related factors. These control variables included enabling factors (parent educational level, employment status [employed versus unemployed], parent and child health insurance status [each coded as uninsured, public insurance, or private insurance], and family income as a percentage of the federal poverty level [FPL] on the basis of family size and income); predisposing factors (child age and gender; parent age, race, and gender; and family structure [2 vs 1 parent]; and need-related factors (history of a well-child visit in the previous 12 months, presence of parent usual source of medical care,[22] and parent and child history of functional limitations).

All covariates were dichotomized, except for parent and child health insurance status (each coded as uninsured, public insurance, or private insurance), parent education (coded as less than high school, high school, or some college or more), parent race (coded as non-Hispanic white, non-Hispanic black, Hispanic, and other), age (coded as 2–5, 6–11, and 12–17 years for children and as 18–29, 30–39, and ≥40 years for parents), and household income as percentage of FPL (<100%, 100%–199%, 200%–399%, and >400%).

Statistical Analyses

We initially examined the distribution of key variables and summary statistics and then used the sample child weights provided by the NHIS to estimate the national childhood population. We used χ^2 tests to analyze bivariate associations between parent and child deferral of dental care because of cost, as well as parent and child dental use in the previous 12 months.

We fit separate multivariable logistic regression models for each dependent variable (dental use and use deferred by cost), adjusting for sociodemographic covariates. We selected variables for the model when the *P* value of the bivariate association was <.2. We included child gender and age group in the final multivariable model, although their bivariate *P* values were >.2. We examined model covariates for confounding and collinearity by identifying variables that when added sequentially to the model changed the β coefficients or SEs by >10%. We used multiply imputed income variables provided by the National Center for Health Statistics to address missing income variables.[23]

For us to accomplish our goal, we needed all children included in the analysis to have information on their dental visit and their parent's dental visit. We excluded 1465 children who were missing information on child or parent dental visit. These children also had missing information for other model covariates. Excluded children were more likely to be publicly than privately insured and to belong to lower income categories (<100%, 100%–199%, and 200%–299%) than higher income categories (>400%) and less likely to belong to the other and Hispanic racial categories than white category when compared with study children. In addition, we excluded 662 children for whom the adult survey respondent was not the parent. We conducted sensitivity analyses to test the robustness of our results by running the same multivariable regressions including the 662 children with nonparent respondents and found no substantial differences in the results. Hence, we report results only from the 6107 children with information on both child dental visit and parent dental visit. We accounted for the NHIS complex sample design and performed all analyses by using statistical software (SAS 9.1 [SAS Institute, Cary, NC] and SAS-callable SUDAAN 10 [RTI, Research Triangle Park, NC]).

RESULTS

Our final sample comprised 6107 children, representing ~50 million noninstitutionalized US civilian children. The characteristics of the study sample are shown in Table 1. Of the overall sample ($n = 6107$), ~19% were aged 2 to 5 years, 43% were aged 6 to 11 years, and 38% were aged 12 to 17 years. Most had some form of health insurance (87%) and had had a well-child visit in the previous year (72%). Most parents were employed (76%), had a usual source of medical care (85%), had health insurance (76%), and had at least some college education (57%). Overall, ~77% of children and 64% of parents had a dental visit in the previous 12 months. Fourteen percent of parents and 6% of children deferred dental care in the previous 12 months because of cost.

Parents' and Children's Use of Oral Health Services

Among parents who had a dental visit in the previous year, 85.9% of their children also had a dental visit. Conversely, among parents without a history of a dental visit, 62.8% of their chil-

TABLE 1 Overall Weighted Percentages and Child and Parent Dental Visits and Deferred Care in the Previous 12 Months by Selected Characteristics (Bivariate Analysis)

Risk Factors	Overall Weighted %	Child Had Dental Visit			Child's Dental Care Deferred		
		No (n = 1473), %	Yes (n = 4634), %	P[a]	Yes (n = 399), %	No (n = 5707), %	P[a]
Child variables							
Health insurance				<.001			<.001
Uninsured	12.9	21.0	10.6		37.6	11.2	
Public	30.0	33.5	29.0		28.5	30.1	
Private	57.1	45.6	60.4		33.9	58.6	
Age group, y				<.001			<.001
2–5	19.0	44.1	11.6		6.4	19.8	
6–11	43.0	27.7	47.5		43.0	43.0	
12–17	38.0	28.2	40.9		50.6	37.2	
Gender				.270			.010
Male	51.1	52.8	50.6		43.5	51.6	
Female	48.9	47.2	49.4		56.5	48.4	
Had well-child visit	72.4	61.7	75.5	<.001	54.0	73.7	<.001
Child health (functional limitation)	8.5	9.9	8.2	.160	12.8	8.3	<.001
Parent variables							
Health insurance				<.001			<.001
Uninsured	23.7	31.0	21.5		41.1	22.5	
Public	16.6	19.3	15.8		17.2	16.5	
Private	59.8	49.7	62.7		41.7	61.0	
Education				<.001			.0100
Less than high school	16.2	23.2	14.2		16.3	16.2	
High school	26.8	29.1	26.1		35.3	26.2	
Some college or more	57.0	47.7	59.7		48.4	57.6	
FPL, %[b]				<.001			<.001
<100	17.0	24.2	14.9		23.1	16.6	
100–199	23.0	28.8	21.3		40.0	21.9	
200–399	32.7	30.8	33.3		31.1	32.8	
>400	27.3	16.1	30.6		6.8	28.7	
Unemployed	24.2	28.6	23.0	<.001	27.5	24.0	.260
Age group, y				<.001			.480
18–29	16.6	24.4	14.3		18.0	16.4	
30–39	42.0	43.6	41.5		44.8	41.8	
≥40	41.5	32.0	44.2		37.1	41.8	
Gender				.110			.010
Male	37.9	35.7	38.6		30.5	38.5	
Female	62.1	64.3	61.4		69.5	61.5	
Race				<.001			.040
White	62.9	56.3	64.8		65.6	62.7	
Black	13.8	15.1	13.4		9.0	14.1	
Hispanic	18.1	22.2	16.9		20.4	18.0	
Other/unknown	5.2	6.4	4.9		5.0	5.2	
2-Parent Household	73.1	69.9	74.1	.020	61.1	73.9	<.001
No usual source of medical care	15.0	22.5	12.7	<.001	26.3	14.2	<.001
Parent health (functional limitation)	7.3	8.6	7.0	.120	20.5	6.4	<.001

[a] P value is for the difference between each bivariate association by using χ^2 tests.
[b] Percentage FPL from 2007 Department of Health and Human Services guidelines on the basis of household size and income.

dren had a dentist visit. Table 1 shows the characteristics of children and parents by history of child use or deferral of dental visits.

Bivariate analyses testing the association between parent and child use of oral health services yielded a significant positive relationship. Children were more likely to have a dental visit when their parents also had a dental visit (odds ratio [OR]: 3.61 [95% confidence interval (CI): 3.05–4.27]), compared with children of parents who did not have a dental visit (Table 2).

After adjustment for sociodemographic and use variables, children were more likely to have a dental visit when their parents also had a

TABLE 2 Association Between Parent and Child Dental Use

Parents' Dental Visit	Children's Dental Visit, OR (95% CI)	
	Unadjusted	Adjusted[a]
No	1.00[b]	1.00[b]
Yes	3.61 (3.05–4.27)	3.36 (2.71–4.18)

[a] Data adjusted for child gender, age, health insurance, functional limitation, and receipt of well-child visit; parent age, gender, race, education, functional limitation status, health insurance, employment status, and usual source of medical care; and family composition and family FPL.
[b] Reference group.

dental visit (adjusted OR: 3.36 [95% CI: 2.71–4.18]), compared with children of parents who did not have a dental visit.

Parents' and Children's Deferred Oral Health Care Because of Cost

Among parents who had their dental care deferred in the previous year, 27% of their children also had dental care deferred in the previous year. In contrast, only 2.9% of children whose parents had no history of deferred dental care in the previous year had their own dental care deferred. Bivariate analyses testing the association between parent and child deferred care showed that children of parents who deferred their dental care because of cost were more likely to have care deferred because of cost as well (OR: 12.59 [95% CI: 9.51–16.66]; Table 3). In our final multivariable model, compared with children of parents who did not defer seeking dental care, children of parents who deferred their dental care because of cost were more likely to have care deferred because of cost as well (adjusted OR: 12.47 [95% CI: 9.09–17.11; Table 3).

DISCUSSION

The objective of our study was to investigate associations between parents' and children's use of oral health services among a representative sample of US children, controlling for multiple potentially confounding factors. We found that parents who did not obtain dental care for themselves were less likely to bring their children in for dental care. We also demonstrated that when parents defer seeking dental care because of cost, their children are at an increased risk for deferred care as well, regardless of insurance status. ORs diminished only slightly after controlling for important covariates, including parent educational level, race, and FPL. These findings further support the notion that parental oral health–seeking behaviors for themselves may have an important effect on oral health–seeking behaviors on behalf of their children. Kelly et al[24] identified structural barriers that families enrolled in Medicaid faced in accessing oral health services, highlighting the relative importance of parental "buy-in" to oral health care. Their findings suggested that caregivers' responses to access barriers differed, not only on the basis of their level of educational attainment but also on their individual oral health values. Ultimately, their response (or lack thereof) to the structural barriers may have influenced their children's receipt of oral health services.

Maserejian et al[25] also examined reasons for underuse of free preventive dental services in 2 New England cities. Study findings indicated that elimination of financial and systems barriers were insufficient to improve long-term use of dental services in families with unmet dental needs. The study underscored the importance of programs that target broader social contexts, not only providing convenient provider locations but also fostering oral health values among individuals.

As policy makers design strategies to enhance dental use rates among US children, there is a need for innovative, multifaceted preventive approaches to help address lingering gaps in disparities. One possible approach is through family-centered strategies within the context of a dental home. Strategies that target the entire family unit for oral health care delivery, education, and promotion could potentially influence the oral health values of adults and children in the household, with long-term impacts on their oral health behaviors and status.

Our findings corroborate and expand on previous studies that explored parental determinants of children's use of dental services in selected groups.[17–19,26] According to Scott et al,[18] a mother's most recent dental visit was the most influential factor in determining regular use of dental services among high school students in Quebec. A 2003 UK Child Dental Health Survey revealed that children's use of oral health services before the age of 5 was associated with their mothers' use patterns.[17]

Our study focused on links between parents' and children's use patterns among a nationally representative sample of US children. These findings parallel results of previous national studies that demonstrated strong links between mothers' and children's use of physician services for medical care.[27–29] The results of our study add to a growing body of literature highlighting the important linkages between parent and child access to oral health care.

This study has several limitations. The NHIS relies on parental self-report and so could be subject to bias, including recall of the frequency of dental visits in the previous 12 months. Also, we based our analyses on receipt of 0 vs ≥1 dental visit per year and not on

TABLE 3 Association Between Parent and Child Deferred Dental Care Because of Cost

Parents' Deferred Dental Care Because of Cost	Children's Deferred Dental Care Because of Cost, OR (95% CI)	
	Unadjusted	Adjusted[a]
No	1.00[b]	1.00[b]
Yes	12.59 (9.51–16.66)	12.47 (9.09–17.11)

[a] Data adjusted for child gender, age, health insurance, functional limitation, and receipt of well-child visit; parent age, gender, race, education, functional limitation status, health insurance, employment status, and usual source of medical care; and family composition and family FPL.
[b] Reference group.

current recommendations. The American Academy of Pediatrics and the American Academy of Pediatric Dentists recommend that oral health assessments and services begin by age 1, with periodic dental checks at least twice a year.[30,31] We were also unable to distinguish among acute, emergent, and preventive visits, because the NHIS does not differentiate these. Because children who were excluded from our study differed from study children significantly on several sociodemographic variables, results may be slightly biased. We could not conduct sensitivity analyses to assess this bias because the main variable of interest (dental visit data) was missing.

Last, our inability to measure dental insurance coverage is a limitation. Because the NHIS does not include a dental insurance variable, we were limited to the health insurance variable in this analysis. Although most families with dental insurance also have health insurance coverage, the reverse is not necessarily the case. Future studies with data sets that provide information on dental insurance could help to determine its relative importance.

CONCLUSIONS

This study suggests that parental oral health–seeking behaviors for themselves may have an important effect on oral health–seeking behaviors on behalf of their children, regardless of the child's insurance status. Comprehensive strategies that are designed to enhance awareness of the importance of oral health and to eliminate financial barriers to accessing care could have a positive effect on children's use of oral health services. Family-centered approaches to oral health delivery, education, and promotion could potentially influence the oral health values of the entire family unit, with long-term impact on their oral health behaviors and status.

ACKNOWLEDGMENTS

Dr Isong's work is supported by a National Research Service Award (T32 HP10018) from the Health Resources and Services Administration, Department of Health and Human Services.

We thank Cecilia Vieira and Dr Kenneth Soyemi for support and contributions to the study design and analyses.

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The Medical Home Competing with the "Medical Store": *It appears that as the H1N1 vaccines became more available this winter, supermarkets and pharmacies have been competing with doctors' offices to become the preferred site for administration of this vaccine. According to an article in* The Wall Street Journal *(Martin TW, December 29, 2009), retailers like Rite Aid, Kroger, and Walgreens are setting up in-store health clinics to attract more customers into the store by offering vaccines at a discounted cost of only $10 to $18. Once they come in for the shot, retailers hope customers will then boost sales by investing in other store items such as hand sanitizer at the same time. Unfortunately, better sales for stores that offer these vaccines does not mean better overall coordination of high quality cost-efficient health care that could otherwise be provided through a pediatrician's office. We await the study that proves otherwise.*

Noted by JFL, MD

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DOI: 10.1542/peds.2009-1417 originally published online February 1, 2010;

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