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Linking Mother and Child Access to Dental Care

David Grembowski, PhD^{a,b}, Charles Spiekerman, PhD^a, Peter Milgrom, DDS^{a,b}

Departments of ^aDental Public Health Sciences and ^bHealth Services, University of Washington, Seattle, Washington

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What's Known on This Subject

Few studies have examined whether an association exists between low-income mothers who have an RSDC and their preschool-aged children's dental use.

What This Study Adds

Young children of black and Hispanic mothers with an RSDC at baseline had greater dental use and received more preventive services in the subsequent year than children of mothers without an RSDC.

ABSTRACT

OBJECTIVES. Among young children in low-income families covered by Medicaid, we estimated (according to racial/ethnic group) whether children who have mothers with a regular source of dental care at baseline have greater dental use in the subsequent year than children with mothers without a regular source.

METHODS. From a population of 108 151 children (aged 3 to 6 years) who were enrolled in Medicaid and their low-income mothers in Washington state, a disproportionate stratified random sample of 11 305 children aged 3 to 6 was selected from enrollment records in 4 racial/ethnic groups: black (3791), Hispanic (2806), white (1902), and other racial/ethnic groups (2806). In a prospective cohort design, we conducted a baseline survey of mothers and for respondents collected their children's Medicaid dental claims in the 1-year follow-up period. Multivariable regression models estimated the associations between the mothers' having a regular source of dental care at baseline and their children's prospective dental use.

RESULTS. Approximately 38% of the mothers had a regular source of dental care. Among children of black and Hispanic mothers, having a mother with a regular source of dental care at baseline was associated with greater odds of receiving any dental care in the subsequent year. For children with dental use, children of black or Hispanic mothers with a regular source of dental care received 1.22 and 1.10 more preventive services, respectively. For children of white mothers, associations were in the same direction but not significant.

CONCLUSIONS. For young children of black and Hispanic mothers, dental care use is higher when their mothers have a regular source of dental care. For low-income young children with Medicaid, increasing the mothers' access to dental care may increase the children's use of dental and preventive services, which, in turn, may reduce racial/ethnic inequalities in oral health. *Pediatrics* 2008;122:e805–e814

TOOOTH DECAY IS a growing, severe problem among low-income and minority preschool-aged children that is compounded by limited access to dental care.^{1–4} Simply increasing children's access to dental care through universal dental insurance may not reduce the inequalities in oral health.⁵

An alternative approach to solving this public health problem may exist through the links between mother and child access to dental care and oral health.⁶ If low-income mothers have a regular source of dental care (RSDC) and receive preventive services, then oral health benefits may accrue to both mother and child through biological and dental care pathways. Mothers are the primary source of the dental caries bacteria infection in their children, and delivery of caries-preventive technologies to mothers effectively reduces their cariogenic bacteria and the caries experiences of their infants.^{6–18} Through regular dental care, mothers build positive dental knowledge, attitudes, and self-care practices,^{19,20} which may influence whether she takes her child to the dentist.²¹ A dentist who has the mother as a patient may be more likely to accept her Medicaid-enrolled child.

Medical studies usually report that individuals with a regular place or provider of care have more physician visits and preventive services and less illness care than individuals without a regular place or provider^{22–28}; however, few studies have examined whether an association exists between mothers' RSDC and their preschool-aged children's dental use. In a cross-sectional study of Seattle children aged 5 to 11 years, children of low-income mothers who had

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Key Words

children, mothers, access to dental care, regular source of dental care, dental insurance, Medicaid

Abbreviations

RSDC—regular source of dental care
FPL—federal poverty level
ABCD—Access to Baby and Child Dentistry
SESRC—Social and Economic Science Research Center
OR—odds ratio
CI—confidence interval

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Address correspondence to David Grembowski, PhD, University of Washington, Department of Dental Public Health Sciences, Box 357475, 1959 NE Pacific Street, Seattle, WA 98195-7475. E-mail: grem@u.washington.edu

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an RSDC had greater odds of a dental visit.²¹ A cross-sectional Detroit, Michigan, study reported that black caregivers with preventive dental visits were more likely to take their preschool-aged children to the dentist.²⁹ No longitudinal study of low-income, young children has examined whether mothers' having an RSDC at baseline is related to their children's dental use in the future.

Because Medicaid eligibility differs for low-income mothers and children, no association may exist between mother RSDC and their preschool-aged children's prospective dental use. As a result of Medicaid and the State Children's Health Insurance Program, children up to 250% of the federal poverty level (FPL) have the highest rates of dental insurance coverage in the United States,³⁰ partly because only approximately half of the US population has public or private dental insurance.³¹ In contrast, pregnant women qualify for Medicaid only when their family incomes are at <133% of the FPL or higher in some states, but at 60 days postpartum, eligibility reverts to the FPL.³² Because mothers without dental insurance are less likely to have an RSDC,³³ the mother-child difference in Medicaid coverage may undermine the potential link between the mother's RSDC and child's dental use.

We addressed this question in a population-based sample of young children who were in low-income families in Washington state and had Medicaid dental insurance. Our purpose was to evaluate, according to racial/ethnic group, whether children who had mothers with an RSDC at baseline had greater dental use in the subsequent year than children of mothers without an RSDC.

METHODS

Population, Sample, and Study Design

The population consisted of 108 151 children who were enrolled in Medicaid (the US public dental insurance program for low-income individuals) and aged 3 to 6 years and their mothers in Washington state (children's household income eligibility for Medicaid in Washington state is 250% of the FPL). We chose children aged 3 to 6 years because the primary dentition would be erupted fully, and dental use for children who were younger than 3 was <30%,³⁴ which decreases the likelihood of detecting an association between mothers' RSDC and their children's dental use.

In April 2004, a disproportionate stratified random sample of 11 305 preschool-aged children aged 3 to 6 was selected from Medicaid enrollment records in 4 racial/ethnic groups: black (3791), Hispanic (2806), white (1902), and other racial/ethnic groups (2806). When a household had >1 child in the age range, 1 child was selected randomly.

The prospective cohort study design consisted of a baseline survey of children's mothers in September to December 2004, followed by an analysis of the children's dental use from Medicaid dental claims from January to December 2005. Study protocols were approved by the Washington State institutional review board.

Measures

Measures were derived from the conceptual model of dental care by Grembowski et al.¹⁹

Mothers' RSDC

RSDC was measured by whether a mother had a regular place of dental care or regular dentist on the basis of Starfield's³⁵ definition of a regular source of care: 1 place, 1 provider over time for preventive and therapeutic care. Measures that satisfied Starfield's criteria were constructed from usual source of health care items in previous medical and dental surveys.³⁶⁻³⁸

A mother had a regular place of dental care when she (1) responded "yes" to, "Is there a particular dental office, clinic, health center, or other place that you usually go to for dental care?" (2) the place where the mother goes was not a hospital emergency department; (3) she went to the place for ≥ 1 year; and (4) the place was a source of preventive services, measured by having teeth cleaned in the past 2 years.³³ Mothers had a regular dentist when (1) items 1, 2, and 4 for a regular dental place were met, (2) mothers reported seeing the same dentist each time they went there, and (3) mothers went to that dentist for ≥ 1 year. When mothers had a regular place or dentist, we asked whether mother and child had the same place of dental care and dentist.

Mother, Family, and Place Characteristics

Mothers' race/ethnicity was measured by the question, "What race or ethnic background best describes you?" with responses of Hispanic, Latino, or Spanish; white, not Hispanic; black or African American; American Indian; Alaska Native; Asian (eg, Vietnamese, Korean, Japanese, Filipino, Chinese, Asian Indian); Pacific Islander (eg, Hawaiian, Samoan); or some other race/ethnicity. Socioeconomic status was measured by the mother's highest educational degree, employment status, and family income in 2003 (categorized by less than \$10 000, between \$10 000 and \$20 000, and more than \$20 000). Dental insurance was measured by whether the mother had no dental insurance, Medicaid, or private dental insurance from an employer. Mother characteristics included mother's age, single parent, current cigarette smoker, which mode of the survey the mother completed, and dental fear.³⁹ Mental health symptoms in the past 4 weeks were assessed by the 5-item mental health scale with scores ranging from 1 (best) to 6 (worst). Categories 5 and 6 were combined because few mothers had severe symptoms. Average scores were rounded and recoded as 5 binary variables for each value, ranging from 1 (best) to 5 (worst).^{40,41} Mothers reported whether they were born in the United States.

Residence characteristics included years living at current address and county. We also measured whether place of residence was rural or urban on the basis of rural-urban commuting area codes.⁴² Dentist supply in the child's county was measured by the number of active licensed dentists per 10 000 population in 2003⁴³ and the number of county dentists who submitted Medicaid claims per 10 000 population in 2004 obtained from Medicaid records.

Child Dental Use and Expenditures

Children's dental use and expenditures were measured from Medicaid dental claims for January to December 2005. Applying the 2-part model to use, we measured whether a child had any Medicaid claims and, given any use, the number of services, defined by Medicaid dental procedure codes, in each of 6 categories of dental care: oral examination, diagnostic, preventive, restorative, surgical and adjunctive, and total expenditures on the basis of allowed Medicaid fees.⁴⁴ We measured the percentage of the follow-up period the child was covered by Medicaid by using eligibility periods in the Medicaid eligibility file.

Child Characteristics

Child survey measures included gender; age; and mother's rating of the child's dental fear, oral health, and pain.^{37,39} The following child measures were collected from Medicaid records to compare children with and without completed questionnaires: whether child had any Medicaid dental claims in January to April 2004 before the sample was drawn; gender; age; number of family members; whether child was disabled; whether child was member of an American Indian tribe; whether child immigrated; whether English was family's primary language; and whether child enrolled in Access to Baby and Child Dentistry (ABCD), a program to increase access to dental care for preschool-aged children who are enrolled in Medicaid in Washington state.^{37,45}

Data Collection

On June 11, 2004, the Department of Social and Health Services, which administers the Medicaid Program, mailed the parents of sampled children letters in English, Spanish, Vietnamese, and Russian, the most prevalent primary languages in the population on the basis of Medicaid records, describing the study and containing instructions to notify the Department of Social and Health Services if they did not want to participate. By the July 14 deadline, 396 parents opted out of the study or had nondeliverable letters, leaving 10 909 participants.

The Social and Economic Science Research Center (SESRC) at Washington State University performed a mixed-mode, Web-mail-telephone survey of mothers by using methods developed by Dillman and colleagues.⁴⁶ Medicaid eligibility files contained a child's name, address, telephone number, and primary language but did not indicate mother's name. Contact materials were addressed "To the Mother of [child's full name]," and all letters and instruments were at the sixth- to eight-grade reading level. English instruments were translated into Spanish, Russian, and Vietnamese by professional translators at the Academy of Languages (www.aolti.com). All modes of the instrument contained the same 66 questions with 109 items.

Starting September 3, SESRC mailed invitation letters to the 10 909 mothers to complete the Web survey, with a Spanish letter also included for families with that primary language. Each letter contained a unique password for accessing the Web survey, and respondents were

entered into a drawing for 25 \$50 grocery certificates. The Web survey was closed on November 3.

Beginning September 27, mothers who had not completed a Web questionnaire were sent a mail questionnaire with letters in English and Spanish to everyone with a \$2 bill incentive in the first mailing. Follow-ups to nonrespondents included a thank you/reminder postcard mailed 2 weeks later to everyone, and replacement questionnaires and cover letter were mailed to nonrespondents of the Web and mail questionnaire 4 weeks later by US priority mail. Questionnaires received by January 31, 2005, were included in the study.

Starting November 3, SESRC mailed letters to mothers who had not responded to the Web or mail questionnaires and invited them to complete a telephone interview in English, Spanish, Russian, or Vietnamese. When a contacted parent refused to participate, refusal conversions were not attempted, and calling ended on December 31, 2004. Completed instruments from the 3 modes were combined for the analysis.

After the 1-year follow-up in 2006, personal characteristics, enrollment information, and January 2004 to December 2005 dental claims with encrypted identifiers were collected from Medicaid for children with a completed survey and linked with survey data using a file from SESRC that contained each child's survey identifier and encrypted Medicaid identifier. Medicaid records without personal identifiers also were collected for children without completed questionnaires, excluding survey refusals, containing child characteristics and January to April 2004 Medicaid dental use.

Data Analysis

Bivariate tests compared the characteristics and dental use of children with and without completed questionnaires, excluding children whose mothers refused study participation. Pearson χ^2 test and analysis of variance determined whether child and mother characteristics and the percentage of mothers with an RSDC were significantly different for black, Hispanic, and white participants. For mothers with an RSDC in each racial/ethnic group, we used Pearson χ^2 test and analysis of variance to test whether a mother and a child with the same place or dentist had greater child dental use than a mother and a child with different places or dentists.

We use generalized linear models with a logit link to estimate whether mothers' RSDC (measure of a regular place or dentist) at baseline was associated with the probability of any child use of dental care in the follow-up year. Among children with any dental use, we used Poisson and γ link functions for number of services and expenditures among child users, respectively.^{44,47} RSDC effects may differ for any use versus intensity of care among users, mainly because the mother rather than the dentist usually makes the initial decision to seek dental care for the child, whereas dentists largely make treatment decisions for children with visits.

Separate models were estimated for black, Hispanic, and white mothers. Models were estimated in 3 steps, initially entering child covariates, adding mother and family covariates, and finally entering propensity scores

to attempt to correct for potential endogeneity between RSDC and child dental use.^{22–25} An RSDC is not a randomly assigned attribute. Mothers who have an RSDC may differ from those who do not in observed and unobserved ways, and the differences in the mothers may also contribute to differences in their children's dental use. We estimated the propensity of mothers' having an RSDC as a function of age, race/ethnicity, income, education, employment status, dental insurance, survey mode, years in current residence and county, rural or urban residence, and county dentist/population ratio. The propensity score was then categorized into quintiles and added to the final model.⁴⁴ Regression analyses were performed for children with complete data across all 3 models. For mothers with an RSDC, analyses were repeated in each racial/ethnic group to test whether child dental use or expenditures differed for mothers with a regular dentist and mothers with only a regular place. Models were estimated by using R 2.2.1 statistical software (R Foundation for Statistical Computing, Vienna, Austria).

Analyses were repeated for 2 racial/ethnic groups, American Indian and Asian mothers, in the fourth racial/ethnic group of the study's disproportionate stratified sample. Because sample sizes are small, these analyses are exploratory.

RESULTS

Survey and Eligibility

In total, 4762 parents completed the Web ($n = 306$), mail ($n = 3329$), or telephone ($n = 1127$) instruments. The unadjusted response rate is 44% (4762 of 10 909), and, excluding the 4387 households with ineligible individuals or inaccurate contact information, the contact rate was 73% (4762 of 6522).³³

Compared with children without questionnaires ($n = 5444$), children with completed questionnaires had similar characteristics but were more likely to have a Medicaid dental claim in January to April 2004 (43% vs 36%; $P < .001$) and be enrolled in ABCD (18% vs 13%; $P < .001$) and less likely to be from an American Indian tribe (3.6% vs 5.1%; $P < .001$).

After exclusion of respondents who were not mothers, 4364 mothers remained. From those, we excluded 256 children who were not enrolled in Medicaid at least 30 days in the follow-up period. Of the remaining 4108, we excluded 550 children with private dental insurance because their dental use could not be measured accurately by Medicaid dental records. We excluded from analyses 115 mothers who declined to specify their race, 155 who specified "other" race, and 70 who specified >1 race/ethnicity. Analyses were based on the remaining 3218 mothers in the following racial/ethnic groups: black ($n = 675$), Hispanic ($n = 1156$), white ($n = 1094$), Asian ($n = 183$), and American Indian ($n = 110$).

Characteristics of Mothers and Children According to Racial/Ethnic Group

Table 1 compares the personal characteristics of mothers and children according to racial/ethnic group. Statisti-

cally significant differences exist for almost all of the characteristics across the black, Hispanic, and white racial/ethnic groups.

Mothers' RSDC

The percentage of mothers with a regular place of dental care was similar across racial/ethnic groups (black: 36%; Hispanic: 39%; white: 37% [$P = .37$]). Of these, ~40% of the black and white mothers and 59% of the Hispanic mothers reported that mother and child had the same place of dental care ($P < .001$). Approximately 36% of the Asian mothers and 43% of the American Indian mothers had a regular source.

The percentage of mothers with a regular dentist differed according to racial/ethnic group (black: 22%; Hispanic: 24%; white: 31% [$P < .001$]). Most of these mothers and children saw the same dentist (black: 84%; Hispanic, 75%; white: 92% [$P < .001$]). Approximately 25% of the Asian mothers and 28% of the American Indian mothers had a regular dentist.

Mothers' RSDC and Children's Dental Use

Table 2 presents descriptive statistics for children's dental use and expenditures in the 1-year follow-up period. Hispanic children were more likely to have any dental use (78%) than black (62%) or white (67%) children ($P < .001$). Among children with any dental use, children of Hispanic mothers had the highest average dental expenditures and received more services in each of the 6 categories and for most specific dental services. In contrast, children of black mothers had the lowest average dental expenditures and services. Approximately 67% of children of Asian mothers and 52% of children of American Indian mothers had any dental use. Among children with dental use, average (SD) 2005 expenditures were \$256 (\$278) and \$324 (\$444) for children of Asian and American Indian mothers, respectively.

Figure 1 indicates the percentage of children with dental care use in the 1-year follow-up period for mothers with an RSDC versus without an RSDC. The differences in use were smallest for white mothers (66% vs 70%; $P = .22$) and were larger for Hispanic mothers (75% vs 83%; $P < .01$) and black mothers (58% vs 69%; $P < .01$). The percentage of children with any dental use was similar for children of Asian mothers who had an RSDC (69%) versus no RSDC (66%; $P = .67$) and for children of American Indian mothers who had an RSDC (50%) versus no RSDC (53%; $P = .74$). The likelihood of child dental use was not significantly different for mothers and children with the same place of dental care or dentist versus mothers and children with different places or dentists.

Tables 3 and 4 present odds ratios (ORs) indicating whether mothers who had an RSDC at baseline was associated with their children's dental use in the 1-year period after the survey, after adjustment for possible confounders in 3 models that contained children's covariates, children's and mothers' covariates, and the mothers' propensity to have an RSDC, respectively. In each racial/ethnic group, estimates were similar across

TABLE 1 Personal Characteristics of Mothers and Children According to Racial/Ethnic Group

Characteristic	Black Mothers (n = 661)	Hispanic Mothers (n = 1142)	White Mothers (n = 1094)	P	Asian Mothers (n = 176)	American Indian Mothers (n = 98)
Mothers						
Age, average ± SD, y	30.6 ± 6.0	30.6 ± 6.0	31.1 ± 6.2	.126	33.1 ± 6.6	30.8 ± 5.8
Mother living alone, %	68	23	38	.000	28	37
Percent immigrants	9	77	7	.000	88	1
Length of Residence, y						
In county						
<1	3	3	3	.013	6	3
1–2	9	9	10		7	10
3–5	13	19	15		15	11
>5	76	69	72		73	75
At same address						
<1	27	18	22	.000	21	22
1–2	39	32	33		27	23
3–5	23	28	25		25	25
>5	11	22	21		28	30
Education						
Did not finish high school	13	50	11	.000	15	17
High school diploma or GED	35	34	35		35	42
Some college or 2-y associate's degree	48	14	46		35	35
4-y college degree or higher	4	3	8		16	6
Employment status						
Full-time	36	30	31	.000	39	27
Part-time or in school	26	24	27		27	23
Homemaker	12	30	29		22	22
Disabled	6	2	4		3	3
Unemployed	19	15	10		10	24
Dental insurance						
None	25	74	50	.000	53	50
Medicaid	58	14	36		22	38
Private	18	12	15		25	13
Annual household income						
<\$10 000	59	46	41	.000	43	48
\$10 000–\$20 000	25	31	28		28	26
>\$20 000	16	23	31		29	27
Cigarette smoking, %						
Some days or everyday	35	7	38	<.001	13	34
Dental beliefs/fear, %						
Believes dentist visits can prevent loose teeth	57	74	63	<.001	73	56
High dental fear	18	22	18	.080	11	16
Mental health score						
1 (best)	17	19	9	<.001	13	12
2	38	42	43		35	46
3	28	28	30		36	25
4	13	9	14		13	9
5–6 (worst)	5	3	4		3	8
Survey Mode						
Web	5	3	11	<.001	7	7
Mail	71	61	70		82	78
Telephone	24	36	19		11	15
Children						
Personal and family characteristics						
Child's age, mean ± SD, y	5.1 ± 1.2	4.9 ± 1.2	5.0 ± 1.2	.007	4.9 ± 1.3	5.2 ± 1.2
Female, %	52	50	48	.315	50	51
Enrolled in Medicaid, 2005, mean ± SD, d	344 ± 62	350 ± 50	341 ± 67	<.001	327 ± 90	335 ± 76
Household primary language not English, %	3	67	4	<.001	22	2
Caregiver not US citizen, %	0.3	0.7	2.1	<.001	1.1	0.0
Dental characteristics						
Mother rated oral health of child, average ± SD	3.7 ± 1.1	3.3 ± 1.1	3.7 ± 1.1	<.001	3.4 ± 1.1	3.3 ± 1.1
Sometimes/frequently had dental pain, %	16	16	13	.102	11	20
High dental fear, %	11	24	13	<.001	22	18
Enrolled in ABCD program, %	4	25	24	<.001	11	22
County characteristics						
Lives in rural zip code, %	2	40	22	<.001	2	32
Medicaid dentists per 10 000 residents in county, mean ± SD	2.7 ± 0.4	2.6 ± 0.7	2.8 ± 0.8	<.001	2.7 ± 0.5	2.8 ± 0.8

P values for differences between black, Hispanic, and white groups.

TABLE 2 Annual (2005) Dental Use and Expenditures From Medicaid Dental Claims for Young Medicaid-Insured Children According to the Mother's Racial/Ethnic Group

Parameter	Total Expenditures and Average No. of Services, According to Category, for Children With Claims						
	Black Mothers (n = 661)		Hispanic Mothers (n = 1142)		White Mothers (n = 1094)		P
Children with any use of dental services, %	62		78		67		<.001
Total expenditures, mean (SD), \$	227	(243)	308	(355)	277	(325)	<.001
Average No. of services according to category							
Oral examinations, mean (SD)	1.42	(0.79)	1.73	(1.03)	1.55	(0.84)	<.001
Radiographs, mean (SD)	1.70	(1.54)	1.94	(1.71)	1.72	(1.56)	.011
Preventive, mean (SD)	3.64	(2.83)	4.43	(3.32)	3.99	(2.77)	<.001
Restorative, mean (SD)	1.31	(2.34)	1.83	(2.96)	1.58	(2.76)	.005
Surgical, mean (SD)	0.25	(0.74)	0.30	(0.94)	0.25	(0.74)	.365
Adjunctive/emergency (palliative), mean (SD)	0.45	(0.97)	0.62	(1.37)	0.53	(1.18)	.051
Average No. of services according to type of procedure							
Prophylaxes, mean (SD)	0.13	(0.36)	0.17	(0.43)	0.21	(0.46)	.010
Oral health education, mean (SD)	1.08	(0.69)	1.40	(1.01)	1.26	(0.87)	<.001
Fluoride, mean (SD)	1.21	(0.72)	1.55	(0.94)	1.34	(0.71)	<.001
Sealants (per tooth), mean (SD)	1.17	(2.28)	1.26	(2.44)	1.13	(2.23)	.548
Space maintenance, mean (SD)	0.03	(0.24)	0.05	(0.30)	0.05	(0.29)	.722
Amalgams, mean (SD)	0.36	(1.21)	0.36	(1.18)	0.40	(1.28)	.768
Composites/resin/glass ionomer, mean (SD)	0.74	(1.67)	1.13	(2.16)	0.80	(1.74)	<.001
Crowns, mean (SD)	0.20	(0.90)	0.36	(1.39)	0.38	(1.49)	.066
Pulpotomies, mean (SD)	0.14	(0.56)	0.15	(0.63)	0.21	(0.88)	.187
Simple extraction (primary tooth), mean (SD)	0.02	(0.18)	0.00	(0.03)	0.01	(0.09)	.009
Simple extraction (permanent tooth), mean (SD)	0.23	(0.72)	0.29	(0.92)	0.24	(0.73)	.308
Palliative treatment, minor procedure, mean (SD)	0.02	(0.18)	0.02	(0.16)	0.03	(0.23)	.515
Adjunctive pain control/sedation, mean (SD)	0.32	(0.77)	0.35	(0.87)	0.31	(0.81)	.614
Adjunctive behavior management, mean (SD)	0.09	(0.44)	0.14	(0.51)	0.13	(0.46)	.183

P values for difference between black, Hispanic, and white groups, adjusted for time eligible in 2005.

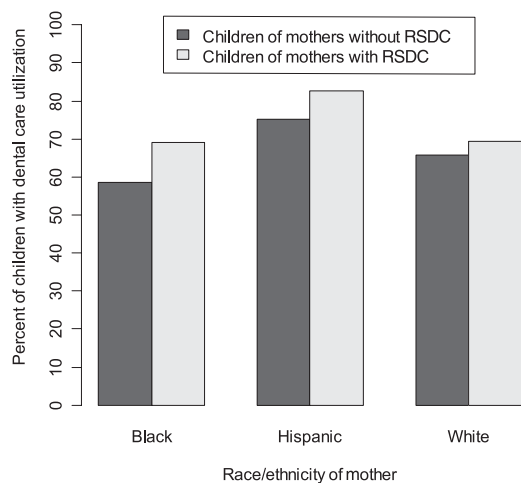


FIGURE 1

Percentage of children with dental care use in the 1-year follow-up period when their mothers had an RSDC versus those who did not have an RSDC at baseline, according to the mothers' racial/ethnic group (Washington State, 2005).

models. In the Hispanic and black regression models, children whose mothers had an RSDC at baseline had greater odds (1.69–1.84) of receiving any dental care in the subsequent year, depending on the independent variables in the model ($P = .024$ – 0.003). In final models, the ORs were 1.69 ($P = .017$) for children of black mothers and 1.84 for children of Hispanic mothers ($P = .003$). For white mothers, the OR (1.12) was in the

expected direction but smaller and not significant. Final models estimated excluding children in ABCD had similar results (OR: 1.73 [$P = .01$] for children of black mothers; OR 1.59 [$P = .04$] for children of Hispanic mothers; OR 1.10 [$P = .65$] for children of white mothers).

Overall, for children who had dental care use, having a mother with an RSDC was not related to children's dental expenditures and number of examination, diagnostic, restorative, surgical, or adjunctive services; however, children of black or Hispanic mothers who had an RSDC received 1.22 and 1.10 more preventive services, respectively, compared with children of mothers without an RSDC ($P = .002$ for black children and $P = .03$ for Hispanic children). Similar results were obtained in regression models with all children regardless of dental use (relative ratio: black children: 1.42 [95% confidence interval (CI): 1.26–1.60]; Hispanic children: 1.22 [95% CI: 1.12–1.32]).

For mothers with a regular place of dental care, child dental use and expenditures generally were not significantly different when their mothers had a regular dentist versus when their mothers had only a regular place; however, for children with dental care use, children of black or white mothers who had a regular dentist received more preventive services in final regression models (adjusted black rate difference: 17% [95% CI: 2%–34%]; white rate difference: 9% [95% CI: 0%–20%]; Hispanic rate difference: 5% [95% CI: –4% to 16%]).

TABLE 3 Estimated Effects of Mothers' RSDC at Baseline (2004) on Whether Children Received Any Medicaid Dental Care in the Subsequent Year (2005), According to the Mothers' Racial/Ethnic Group

Parameter	Black Mothers (n = 523)		Hispanic Mothers (n = 796)		White Mothers (n = 882)	
	OR	95% CI ^a	OR	95% CI ^a	OR	95% CI ^a
Model 1 with child covariates only	1.80	1.21–2.68	1.76	1.22–2.53	1.13	0.82–1.56
Model 2 with child and mother covariates	1.71	1.11–2.62	1.84	1.24–2.72	1.13	0.80–1.59
Model 3 with children and mother covariates and propensity scores	1.69	1.10–2.62	1.84	1.23–2.73	1.12	0.79–1.58

Shown are adjusted ORs of whether children whose mothers had an RSDC at baseline had greater odds of receiving any dental care in the subsequent year versus children whose mothers had no RSDC, adjusted by using children covariates (percentage of 2005 Medicaid covered, dental fear, tooth pain, mother's rating of child's dental health, gender, age, ABCD enrollment, immigrant, primary language in the home, Medicaid dentist availability, and rural/urban community), mother covariates (insurance, income, education, age, survey mode, immigrant status, length of stay in current county and address, marital status, employment, smoking, mental health, and dental fear), and propensity scores.

^a CIs that do not contain 1.00 indicate a significant association with the mothers' RSDC.

TABLE 4 Among Children Receiving Medicaid Dental Care in 2005, Estimated Effects of Mothers' RSDC at Baseline (2004) on Children's Medicaid Dental Expenditures and Number of Services in the Subsequent Year (2005), According to the Mothers' Racial/Ethnic Group

Parameter	Black Mothers (n = 323)		Hispanic Mothers (n = 609)		White Mothers (n = 602)	
	Rate Ratio	95% CI ^a	Rate Ratio	95% CI ^a	Rate Ratio	95% CI ^a
Total expenditures	1.01	0.82–1.23	1.03	0.87–1.22	1.06	0.89–1.27
No. of oral exam services received	1.21	0.99–1.47	1.05	0.92–1.20	1.13	0.98–1.30
No. of diagnostic services received	1.16	0.97–1.40	1.08	0.95–1.23	0.99	0.86–1.14
No. of preventive services received	1.22	1.08–1.38	1.10	1.01–1.19	1.04	0.95–1.14
No. of restorative services received	0.93	0.75–1.17	0.96	0.84–1.10	0.99	0.85–1.16
No. of adjunctive services received	0.99	0.67–1.45	0.89	0.71–1.12	1.13	0.87–1.46
No. of surgical services received	1.22	0.72–2.08	1.22	0.85–1.76	0.81	0.52–1.26

Shown are adjusted incidence rate ratios in dental use and expenditures for children whose mothers had an RSDC versus those whose mothers did not have an RSDC, adjusted by using children covariates (percentage of 2005 Medicaid covered, dental fear, tooth pain, mother's rating of child's dental health, gender, age, ABCD enrollment, immigrant, primary language in the home, Medicaid dentist availability, and rural/urban community), mother covariates (insurance, income, education, age, survey mode, immigrant status, length of stay in current county and address, marital status, employment, smoking, mental health, and dental fear), and propensity scores. Estimates are only for children who had any dental use in 2005.

^a CIs that do not contain 1.00 indicate a significant association with mothers' RSDC.

DISCUSSION

For young children of low-income families covered by Medicaid, we found that having a mother with an RSDC at baseline was associated with greater odds of the child's receiving dental care in the subsequent year, controlling for child and mother characteristics and the mother's propensity to have an RSDC. Mothers' RSDC also was associated with children's receiving more preventive services. These relationships were found for children with black and Hispanic mothers; for children with white mothers, the relationships were in the same direction but smaller in size and not statistically significant. The findings are consistent with medical studies indicating that parental, particularly maternal, health care use is associated with children's use.^{48–51}

The findings are noteworthy given that black and Hispanic children are less likely than white children to receive preventive dental care.^{34,52} For mothers with an RSDC, child dental use and expenditures generally were not significantly different when their mothers had a regular dentist versus only a regular place in each racial/ethnic group.

A regular source may have a stronger association with child dental use for children with black and Hispanic mothers than white mothers because of the minority mothers' experiences in overcoming barriers to dental care. Several US studies documented that racial/ethnic

minority families with low incomes confront more barriers to dental care, have lower access, and receive fewer preventive services than other groups.^{1,19,53} Black and Hispanic mothers who successfully developed an RSDC may have gained knowledge and skills in navigating the dental care system and negotiating the barriers, which may have helped them to overcome discriminatory treatment, difficulty in locating dentists who accept Medicaid, and other barriers to dental care for their children.^{54–56}

An RSDC for mothers may also be related to child dental care use because a regular source shapes mothers' dental knowledge, values and attitudes, and oral health behaviors, which, in turn, may play an important role in shaping the dental practices of their children and increasing their children's access to dental care.^{20,57} This pathway may be true particularly for Hispanic mothers, who have less formal education than black and white mothers, and for black mothers, who are less likely to have preventive dental beliefs.

The relationship between mothers' RSDC and children's dental care use may exist because mothers and children receive care in the same place or see the same dentist; however, this argument is not supported, because for mothers with a regular place, only 40% to 59% reported that their children went to the same place for dental care.

Children with baseline questionnaires had similar characteristics as children without baseline questionnaires but were more likely to have a Medicaid dental claim in January to April 2004 before the baseline survey was conducted (43% vs 36%; $P < .001$), which suggests the 62% to 78% use rates for the 3 racial/ethnic groups are higher than the group rates in the Medicaid population. Lewis et al³⁴ reported that in a national sample, 51% to 78% of children aged 3 to 5 had a preventive dental visit in the previous year, and other studies revealed similar trends.^{29,52}

The percentage of children with dental use (62%–78%) was roughly double the percentage of mothers with an RSDC (~38%). One way to reduce the gap is to expand adult access to Medicaid and private dental insurance. Whereas Medicaid legally requires states to cover children, typically up to 200% of the FPL, adult coverage is optional, and, in 45 states, adults must have incomes below the FPL to qualify for Medicaid (the median state covers working parents up to 63% of the FPL; 41% for nonworking parents).^{58,59} Even when mothers are eligible for Medicaid, 4 states do not cover adult dental services and 15 states cover only emergency care. Although most states cover pregnant women with incomes up to 185% of the FPL or higher, coverage does not extend into children's preschool years, when mother–child transmission of bacteria occurs. In 2006, Massachusetts expanded Medicaid dental insurance to cover low-income women with children younger than 3, which may increase the percentage of mothers with an RSDC.⁶⁰

Mothers with Medicaid dental coverage also face access barriers because dentist participation in Medicaid is low as a result of low fees and other reasons. Increasing Medicaid dental fees, as well as increasing the number of dentists and public dental clinics, may increase the number of mothers with an RSDC.^{33,61–63}

Policy makers are searching for “leveling-up” strategies that effectively reduce health inequalities across social groups.^{1,64,65} Our findings suggest that population-based interventions to increase the percentage of low-income mothers with an RSDC may have greater benefits for the children of black and Hispanic mothers than children of white mothers, potentially reducing inequalities in young children's access to dental care and preventive services, which, in turn, may reduce racial/ethnic inequalities in oral health. A community-based Medicaid intervention in Oregon successfully increased the percentage of pregnant women with a dental home.⁶⁶ On the basis of the percentages in Fig 1 and Table 3 ORs, if black mothers without an RSDC later establish an RSDC, then our results suggest that the annual dental use of their preschool-aged children would increase, on average, from 58% to 70%. For Hispanic mothers, the increase would be from 75% to 84%.

Our findings are limited to low-income mothers of children who were aged 3 to 6 and were enrolled in Medicaid dental insurance in Washington state and to those sampled mothers who responded to our survey. Findings may not be generalizable to other places. Be-

cause low-income mothers are not randomly assigned to an RSDC, associations between mothers' RSDC and children's dental use may not be causal.

CONCLUSIONS

In our sample, dental use was higher for children with black or Hispanic mothers when their mothers had an RSDC. Our findings suggest that increasing the percentage of mothers with an RSDC may increase their children's dental use and preventive services, which, in turn, may reduce decay.⁶⁷ If interventions increase equally the percentage of mothers with an RSDC across racial/ethnic groups, then our results suggest that black and Hispanic children may benefit most, which may ultimately reduce racial/ethnic inequalities in young children's tooth decay.

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