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Linking Mother and Child Access to Dental Care

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Abstract

Objectives—Among young children in low-income families covered by Medicaid, we estimate by racial/ethnic group whether children who have mothers with a regular source of dental care (RSDC) at baseline have greater dental utilization in the following year than children with mothers without a regular source.

Patients and Methods—From a population of 108,151 children enrolled in Medicaid aged 3 to 6 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 four racial/ethnic groups: 3,791 Black; 2,806 Hispanic 1,902 White; and 2,806 other racial/ethnic groups. 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 RSDC at baseline and their children's prospective dental utilization.

Results—About 38% of mothers had a RSDC. Among children of Black and Hispanic mothers, having a mother with a RSDC at baseline was associated with greater odds of receiving any dental care in the following year (OR 1.69, 95% CI 1.10-2.62 for children of Black mothers; OR 1.84, CI 1.23-2.73 for children of Hispanic mothers). For children with dental utilization, children of Black or Hispanic mothers with a RSDC received 1.22 (CI 1.08-1.38) and 1.10 (CI 1.01-1.19) 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 utilization is higher when their mothers have a RSDC. For low-income young children with Medicaid, increasing the mothers' access to dental care may increase the children's utilization of dental and preventive services, which, in turn, may reduce racial/ethnic inequalities in oral health.

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Interpretations of results are the authors' own and do not necessarily represent the official opinion of the National Institute for Dental and Craniofacial Research, Social and Economic Sciences Research Center, Health and Recovery Services Administration, and WithinReach.

Keywords

Children; mothers; access to dental care; regular source of dental care; dental insurance; Medicaid

Tooth decay is a growing, severe problem among low-income and minority preschool children 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, 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 caries-preventive technologies delivered to mothers effectively reduce 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, 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 mother RSDC and their preschool children's dental utilization. In a cross-sectional study of Seattle children aged 5-11 years, children of low-income mothers who had a RSDC had greater odds of a dental visit.²¹ A cross-sectional Detroit study reports that Black caregivers with preventive dental visits were more likely to take their preschool children to the dentist.²⁹ No longitudinal study of low-income, young children has examined whether mothers having a RSDC at baseline is related to their children's dental utilization in the future.

Because Medicaid eligibility differs for low-income mothers and children, no association may exist between mother RSDC and their preschool children's prospective dental utilization. As a result of Medicaid and the State Children's Health Insurance Program (SCHIP), children up to 250% of the federal poverty level (FPL) have the highest rates of dental insurance coverage in the U.S.,³⁰ partly because only about half of the U.S. population has public or private dental insurance.³¹ In contrast, pregnant women qualify for Medicaid only if their family incomes are below 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 a RSDC,³³ the mother-child difference in Medicaid coverage may undermine the potential link between mother RSDC and child dental utilization.

We address this question in a population-based sample of young children in low-income families in Washington state who have Medicaid dental insurance. Our purpose is to evaluate by racial/ethnic group whether children who have mothers with a regular source of dental

care at baseline have greater dental utilization in the following year than children of mothers without a regular source.

METHODS

POPULATION, SAMPLE AND STUDY DESIGN

The population consisted of 108,151 children enrolled in Medicaid (the U.S. public dental insurance program for low-income persons) aged 3 to 6 and their mothers in Washington state (children's household income eligibility for Medicaid in Washington state is 250% of Federal poverty level). We chose children aged 3-6 because the primary dentition would be erupted fully, and dental utilization for children below age 3 was less than 30%,³⁴ which decreases the likelihood of detecting an association between mothers' RSDC and their children's dental utilization.

In April 2004, a disproportionate stratified random sample of 11,305 preschool children aged 3 to 6 was selected from Medicaid enrollment records in the following four racial/ethnic groups: 3,791 Black; 2,806 Hispanic; 1,902 White; and 2,806 other racial/ethnic groups. If a household had more than one child in the age range, one child was selected randomly.

The prospective cohort study design consisted of a baseline survey of children's mothers in September – December 2004, followed by an analysis of the children's dental utilization 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 Grembowski, Andersen, and Chen's conceptual model of dental care.¹⁹

Mother Regular Source of Dental Care—RSDC was measured by whether a mother had a regular place of dental care or regular dentist based on Starfield's³⁵ definition of a regular source of care: one place, one provider over time for preventive and therapeutic care. Measures satisfying 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 if she: a) responded 'yes' to "Is there a particular dental office, clinic, health center or other place that you usually go to for dental care?;" and b) the place where the mother goes was not a hospital emergency room; and c) she went to the place for 1 year or more; and d) the place was a source of preventive services, measured by having teeth cleaned in the past 2 years.³³ Mothers had a regular dentist if: a) items (a), (b) and (d) for a regular dental place were met; and b) mothers reported seeing the same dentist each time they went there; and c) mothers went to that dentist for 1 year or more. If 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 (such as Vietnamese, Korean, Japanese, Filipino, Chinese, Asian Indian); Pacific Islander (such as Hawaiian or 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 - \$20,000, and over \$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 due to few mothers with severe symptoms. Average scores were rounded and recoded as five binary variables for each value, ranging from 1 (best) to 5 (worst).^{40,41} Mothers reported whether they were born in the U.S.

Residence characteristics included years living at current address and county. We also measured whether place of residence was rural or urban based on 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 2003,⁴³ and the number of county dentists submitting Medicaid claims per 10,000 population in 2004 obtained from Medicaid records.

Child Dental Utilization and Expenditures—Children's dental utilization and expenditures were measured from Medicaid dental claims for January – December 2005. Applying the two-part model to utilization, we measured whether a child had any Medicaid claims and, given any utilization, the number of services, defined by Medicaid dental procedure codes, in each of the following categories of dental care: oral examination, diagnostic, preventive, restorative, surgical and adjunctive, as well as total expenditures based on allowed Medicaid fees.⁴⁴ We measured the percentage of the follow-up period the child was covered by Medicaid 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 – April 2004 before the sample was drawn, gender, age, number family members, whether child was disabled, member of a American Indian tribe, immigrated, 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 children enrolled in Medicaid in Washington state.^{37, 45}

DATA COLLECTION

On June 11, 2004, the Department of Social and Health Services (DSHS), 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 based on

Medicaid records, describing the study and containing instructions to notify DSHS 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 using methods developed by Dillman.^{15, 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 6-8th grade reading level. English instruments were translated into Spanish, Russian and Vietnamese by professional translators at 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 two weeks later to everyone, and replacement questionnaires and cover letter mailed to nonrespondents of the Web and mail questionnaire four weeks later by U.S. 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 that invited them to complete a telephone interview in English, Spanish, Russian or Vietnamese. If a contacted parent refused to participate, refusal conversions were not attempted, and calling ended on December 31, 2004. Completed instruments from the three modes were combined for the analysis.

After the 1-year follow-up in 2006, personal characteristics, enrollment information and January 2004 – 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-April 2004 Medicaid dental utilization.

DATA ANALYSIS

Bivariate tests compared the characteristics and dental utilization of children with and without completed questionnaires, excluding children whose mothers refused study participation. Pearson Chi-square test and ANOVA determined whether child and mother characteristics and the percentage of mothers with a RSDC were significantly different for Blacks, Hispanics and Whites. For mothers with a RSDC in each racial/ethnic group, we

used Pearson Chi-square test and ANOVA to test whether a mother and child with the same place or dentist had greater child dental utilization than a mother and 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 utilization, we used Poisson and gamma 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, while dentists largely make treatment decisions for children with visits.

Separate models were estimated for Black, Hispanic and White mothers. Models were estimated in three 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 A RSDC is not a randomly assigned attribute. Mothers having a 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 utilization. We estimated the propensity of mothers having a 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 three models. For mothers with a RSDC, analyses were repeated in each racial/ethnic group to test whether child dental utilization or expenditures differed for mothers with a regular dentist versus mothers with only a regular place. Models were estimated using *R version 2.2.1* © 2005 statistical software.

Analyses were repeated for two 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, 4,762 parents completed either the Web (n=306), mail (n=3,329) or telephone (n=1,127) instruments. The unadjusted response rate is 44% (4,762/10,909), and excluding the 4,387 households with ineligible individuals or inaccurate contact information, the contact rate was 73% (4,762/6,522).³³

Compared to children without questionnaires (n=5,444), children with completed questionnaires had similar characteristics but were more likely to have a Medicaid dental claim in January-April 2004 (43% versus 36%, p<.001) and be enrolled in ABCD (18% versus 13%, p<.001), and less likely to be from an American Indian tribe (3.6% versus 5.1%, p<.001).

After excluding respondents who were not mothers, 4,364 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 4,108, we excluded 550 children with private dental insurance because their dental utilization 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 more than one race/ethnicity. Analyses were based on the remaining 3,218 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 by Racial/Ethnic Group

Table 1 compares the personal characteristics of mothers and children by racial/ethnic group. Statistically significant differences exist for almost all of the characteristics across the Black, Hispanic and White racial/ethnic groups.

Mother Regular Source of Dental Care

The percentage of mothers with a regular place of dental care is similar across racial/ethnic groups (Black, 36%; Hispanic, 39%; White, 37%; $p = .37$). Of these, about 40% of Black and White mothers and 59% of Hispanic mothers reported that mother and child have the same place of dental care ($p < .001$). About 36% of Asian mothers and 43% of American Indians have a regular source.

The percentage of mothers with a regular dentist differs by racial/ethnic group (Black, 22%; Hispanic, 24%; White, 31%; $p < .001$). Most of these mothers and children see the same dentist (Black, 84%; Hispanic, 75%; White, 92% ($p < .001$)). About 25% of Asian mothers and 28% of American Indian mothers have a regular dentist.

MOTHER RSDC & CHILD DENTAL UTILIZATION—Table 2 presents descriptive statistics for children’s dental utilization and expenditures in the 1-year follow-up period. Hispanic children were more likely to have any dental utilization (78%) than Black (62%) or White (67%) children ($p < .001$). Among children with any dental utilization, children of Hispanic mothers had the highest average dental expenditures and received more services in each of the six categories and for most specific dental services. In contrast, children of Black mothers had the lowest average dental expenditures and services. About 67% of children of Asian mothers and 52% of children of American Indian mothers had any dental utilization. Among children with dental use, average 2005 expenditures (st dev) 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 utilization in the 1-year follow-up period for mothers with a regular source of dental care versus without a regular source. The differences in utilization are smallest for White mothers (66% vs. 70%, $p = .22$) and are larger for Hispanic mothers (75% vs. 83%, $p < .01$) and Black mothers (58% vs. 69%, $p < .01$). The percentage of children with any dental utilization was similar for children of Asian mothers who had a regular source (69%) versus no source (66%, $p = .67$) and for children of American Indian mothers who had a regular source (50%) versus no source (53%, $p = .74$).

The likelihood of child dental utilization 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.

Table 3 presents odds ratios indicating whether mothers having a regular source of dental care at baseline is associated with their children's dental utilization in the 1-year period following the survey, after adjusting for possible confounders in three models containing children covariates, children and mother covariates, and the mothers' propensity to have a RSDC, respectively. In each racial/ethnic group, estimates were similar across models. In the Hispanic and Black regression models, children whose mothers had a regular source at baseline had greater odds (1.69 - 1.84) of receiving any dental care in the following year, depending on the independent variables in the model (.024 p .003). In final models the odds ratios were 1.69 (p =.017) for children of Black mothers and 1.84 for children of Hispanic mothers (p =.003). For White mothers, the odds ratio (1.12) is 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 utilization, having a mother with a regular source is 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 have a regular source received 1.22 and 1.10 more preventive services, respectively, compared to children of mothers without a regular source (p =.002 for Blacks and p =.03 for Hispanics). Similar results were obtained in regression models with all children regardless of dental utilization (relative ratio, Black children 1.42, CI 1.26-1.60; Hispanic children 1.22, CI 1.12-1.32).

For mothers with a regular place of dental care, child dental utilization 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 utilization, children of Black or White mothers having a regular dentist received more preventive services in final regression models (adjusted Black rate difference 17%, CI 2%-34%; White rate difference 9%, CI 0%-20%; Hispanic rate difference 5%, CI -4%-16%).

DISCUSSION

For young children of low-income families and covered by Medicaid, we found that having a mother with a regular source of dental care at baseline is associated with greater odds of the child receiving dental care in the following year, controlling for child and mother characteristics and the mothers' propensity to have a regular source of dental care. Mothers' regular source of dental care also was associated with children receiving more preventive services. These relationships were found for children with Black and Hispanic mothers, and 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 parental, and 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 a RSDC, child dental utilization 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 U.S. studies document that racial/ethnic minority families with low incomes confront more barriers to dental care, have lower access and receive less preventive services than other groups.^{1, 19, 53} Black and Hispanic mothers who successfully developed a RSDC may have gained knowledge and skills in navigating the dental care system and negotiating the barriers, which may have helped them overcome discriminatory treatment, difficulty in locating dentists who accept Medicaid and other barriers to dental care for their children.⁵⁴⁻⁵⁶

A regular source of dental care for mothers may also be related to child dental care utilization because a regular source shapes the 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' regular source and child dental care utilization 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 – 59% report their children go to the same place for dental care.

Children with baseline questionnaires had similar characteristics as children without baseline questionnaires but were but were more likely to have a Medicaid dental claim in January-April 2004 before the baseline survey was conducted (43% versus 36%, $p < .001$), which suggests the 62-78% utilization rates for the three racial/ethnic groups are higher than the group rates in the Medicaid population. Lewis et al report that in a national sample 51-78% of children aged 3-5 had a preventive dental visit in the past year, and other studies reveal similar trends.^{29,34,52}

The percentage of children with dental utilization (62-78%) is roughly double the percentage of mothers with a RSDC (about 38%). One way to reduce the gap is to expand adult access to Medicaid and private dental insurance. While Medicaid legally requires states to cover children, typically up to 200% of the federal poverty line, adult coverage is optional, and in 45 states adults must have incomes below the federal poverty line to qualify for Medicaid (the median state covers working parents up to 63% of federal poverty line; 41% for non-working parents).^{58,59} Even if mothers are eligible for Medicaid, four states do not cover adult dental services and 15 states cover only emergency care. While most states cover

pregnant women with incomes up to 185% of the poverty line 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 under 3, which may increase the percentage of mothers with a RSDC.⁶⁰

Mothers with Medicaid dental coverage also face access barriers because dentist participation in Medicaid is low due to low fees and other reasons. Increasing Medicaid dental fees, as well as increasing the number of dentists and public dental clinics, may increase mothers with a 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 imply that population-based interventions to increase the percentage of low-income mothers with a 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 Based on the percentages in Figure 1 and Table 3 odds ratios, if Black mothers without a RSDC later establish a RSDC, our results imply that the annual dental utilization of their preschool children would increase, on average, from 58% to 70%. For Hispanic mothers, the increase would be from 75% to 84%.

Limitations and Conclusions

Our findings are limited to low-income mothers of children aged 3-6 who are 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. Because low-income mothers are not randomly assigned to a RSDC, associations between mother RSDC and children's dental utilization may not be causal.

We conclude that in our sample, dental utilization is higher for children with Black or Hispanic mothers when their mothers have a regular source of dental care. Our findings suggest increasing the percentage of mothers with a RSDC may increase their children's dental utilization and preventive services, which in turn, may reduce decay.⁶⁷ If interventions increase equally the percentage of mothers with a RSDC across racial/ethnic groups, our results suggest Black and Hispanic children may benefit most, which may ultimately reduce racial/ethnic inequalities in young children's tooth decay.

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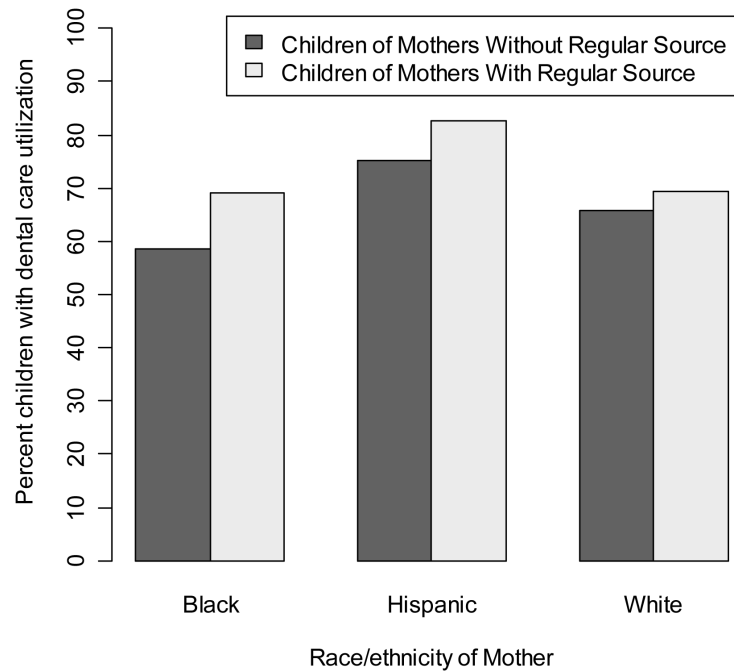


Figure 1. Percentage of Children with Dental Care Utilization in the 1-Year Follow-up Period when their Mothers had a Regular Source of Dental Care (RSDC) versus did not have a RSDC at Baseline, by Mothers' Racial/Ethnic Group (Washington State, 2005)

Table 1

Personal Characteristics of Mothers and Children by Racial/Ethnic Group (Averages and Percentages)

	Black Mothers (n=661)	Hispanic Mothers (n= 1142)	White Mothers (n=1094)	<i>p</i> -value	Asian Mothers (n=176)	American Indian Mothers (n=98)
Mothers						
Average Age	30.6 ± 6.0	30.6 ± 6.0	31.1 ± 6.2	0.126	33.1 ± 6.6	30.8 ± 5.8
Living Status						
Mother living alone (%)	68%	23%	38%	0.000	28%	37%
Immigration Status						
Percent immigrants	9%	77%	7%	0.000	88%	1%
Length of Residence						
<i>Years lived in county</i>						
<1 year	3%	3%	3%	0.013	6%	3%
Between 1-2 years	9%	9%	10%		7%	10%
Between 3-5 years	13%	19%	15%		15%	11%
>5 years	76%	69%	72%		73%	75%
<i>Years lived at same address</i>						
<1 year	27%	18%	22%	0.000	21%	22%
Between 1-2 years	39%	32%	33%		27%	23%
Between 3-5 years	23%	28%	25%		25%	25%
>5 years	11%	22%	21%		28%	30%
Education						
Did not finish high school	13%	50%	11%	0.000	15%	17%
High school diploma or GED	35%	34%	35%		35%	42%
Some college or 2-year associate	48%	14%	46%		35%	35%
4-year college degree or higher	4%	3%	8%		16%	6%
Employment Status						
Employment full-time	36%	30%	31%	0.000	39%	27%
Employed 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%	0.000	53%	50%
Medicaid	58%	14%	36%		22%	38%
Private	18%	12%	15%		25%	13%
Annual Household income						
<\$10,000	59%	46%	41%	0.000	43%	48%
\$10,000-\$20,000	25%	31%	28%		28%	26%
>\$20,000	16%	23%	31%		29%	27%
Cigarette Smoking						

	Black Mothers (n=661)	Hispanic Mothers (n= 1142)	White Mothers (n=1094)	<i>p</i> -value	Asian Mothers (n=176)	American Indian Mothers (n=98)
Some days or everyday (%)	35%	7%	38%	< 0.001	13%	34%
Dental Beliefs/Fear						
Mother believes dentist visits can prevent loose teeth	57%	74%	63%	< 0.001	73%	56%
High dental fear (%)	18%	22%	18%	0.080	11%	16%
Mental health score						
1 (Best)	17%	19%	9%	< 0.001	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%	< 0.001	7%	7%
Mail	71%	61%	70%		82%	78%
Telephone	24%	36%	19%		11%	15%
Children						
Personal & Family Characteristics						
Child's age (years, mean ± SD)	5.1 ± 1.2	4.9 ± 1.2	5.0 ± 1.2	0.007	4.9 ± 1.3	5.2 ± 1.2
Female (%)	52%	50%	48%	0.315	50%	51%
Days enrolled in Medicaid, 2005 (mean±SD)	344±62	350±50	341±67	<0.001	327±90	335±76
Household primary language not English (%)	3%	67%	4%	< 0.001	22%	2%
Caregiver not U.S. citizen (%)	0.3%	0.7%	2.1%	< 0.001	1.1%	0%
Dental Characteristics						
Mother rated oral health of child (avg)	3.7 ± 1.1	3.3 ± 1.1	3.7 ± 1.1	< 0.001	3.4 ± 1.1	3.3 ± 1.1
Sometimes/frequently had dental pain (%)	16%	16%	13%	0.102	11%	20%
High dental fear (%)	11%	24%	13%	< 0.001	22%	18%
Enrolled in ABCD Program (%)	4%	25%	24%	< 0.001	11%	22%
County Characteristics						
Lives in Rural Zip code (%)	2%	40%	22%	< 0.001	2%	32%
Medicaid dentists per 10K residents in county	2.7 ± 0.4	2.6 ± 0.7	2.8 ± 0.8	< 0.001	2.7 ± 0.5	2.8 ± 0.8

Table 2

Annual (2005) Dental Utilization and Expenditures from Medicaid Dental Claims for Young Medicaid Children by Mother's Racial/Ethnic Group*

	Black Mothers (n=661)		Hispanic Mothers (n=1142)		White Mothers (n=1094)		<i>p</i> -value
% Children with any use of dental services	62%		78%		67%		< 0.001
Total expenditures and average number of services, by category, for children with claims (SD: standard deviation)							
	Mean	SD	Mean	SD	Mean	SD	
Total expenditures	\$227	\$243	\$308	\$355	\$277	\$325	< 0.001
Oral exams	1.42	0.79	1.73	1.03	1.55	0.84	< 0.001
Diagnostic	1.70	1.54	1.94	1.71	1.72	1.56	0.011
Preventive	3.64	2.83	4.43	3.32	3.99	2.77	< 0.001
Restorative	1.31	2.34	1.83	2.96	1.58	2.76	0.005
Surgical	0.25	0.74	0.30	0.94	0.25	0.74	0.365
Adjunctive/Emergency (palliative)	0.45	0.97	0.62	1.37	0.53	1.18	0.051
Oral exams	1.41	0.78	1.68	0.99	1.53	0.82	< 0.001
Limited visual assessment	0.01	0.09	0.04	0.21	0.03	0.18	0.003
X-rays	1.70	1.54	1.93	1.71	1.72	1.55	0.011
Prophylaxes	0.13	0.36	0.17	0.43	0.21	0.46	0.010
Oral health education	1.08	0.69	1.40	1.01	1.26	0.87	< 0.001
Fluoride	1.21	0.72	1.55	0.94	1.34	0.71	< 0.001
Sealants (per tooth)	1.17	2.28	1.26	2.44	1.13	2.23	0.548
Space maintenance	0.03	0.24	0.05	0.30	0.05	0.29	0.722
Amalgams	0.36	1.21	0.36	1.18	0.40	1.28	0.768
Composites/resin/glass ionomer	0.74	1.67	1.13	2.16	0.80	1.74	< 0.001
Crowns	0.20	0.90	0.36	1.39	0.38	1.49	0.066
Pulpotomies	0.14	0.56	0.15	0.63	0.21	0.88	0.187
Simple extraction (primary tooth)	0.02	0.18	0.00	0.03	0.01	0.09	0.009
Simple extraction (permanent tooth)	0.23	0.72	0.29	0.92	0.24	0.73	0.308
Palliative treatment	0.02	0.18	0.02	0.16	0.03	0.23	0.515
Adjunctive pain control/sedation	0.32	0.77	0.35	0.87	0.31	0.81	0.614
Adjunctive behavior management	0.09	0.44	0.14	0.51	0.13	0.46	0.183

* *p*-values for difference between Black, Hispanic and White groups, adjusted for time eligible in 2005

Table 3

Estimated Effects of Mothers' Regular Source of Dental Care at Baseline (2004) on Children's Prospective Medicaid Dental Utilization and Expenditures in the Following Year (2005), by Mothers' Racial/Ethnic Group

	Black Mothers (n=523)			Hispanic Mothers (n=796)			White Mothers (n=882)		
	Odds Ratio	95% confidence interval***	Rate Ratio	Odds Ratio	95% confidence interval***	Rate Ratio	Odds Ratio	95% confidence interval***	Rate Ratio
Adjusted odds ratios of whether children whose mothers had a regular source of dental care at baseline had greater odds of receiving any dental care in the following year versus children whose mothers had no regular source*									
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
Adjusted** incidence rate ratios in dental utilization and expenditures for children*** whose mothers had a regular source of dental care versus those whose mothers did not have a regular source									
Black Mothers (n=323)									
	Rate Ratio	95% confidence interval***		Rate Ratio	95% confidence interval***		Rate Ratio	95% confidence interval***	
Total expenditures	1.01	0.82	1.23	1.03	0.87	1.22	1.06	0.89	1.27
Number of oral exam services received	1.21	0.99	1.47	1.05	0.92	1.20	1.13	0.98	1.30
Number of diagnostic services received	1.16	0.97	1.40	1.08	0.95	1.23	0.99	0.86	1.14
Number of preventive services received	1.22	1.08	1.38	1.10	1.01	1.19	1.04	0.95	1.14
Number of restorative services received	0.93	0.75	1.17	0.96	0.84	1.10	0.99	0.85	1.16
Number of adjunctive services received	0.99	0.67	1.45	0.89	0.71	1.12	1.13	0.87	1.46
Number of surgical services received	1.22	0.72	2.08	1.22	0.85	1.76	0.81	0.52	1.26
Hispanic Mothers (n=609)									
	Rate Ratio	95% confidence interval***		Rate Ratio	95% confidence interval***		Rate Ratio	95% confidence interval***	
Total expenditures	1.01	0.82	1.23	1.03	0.87	1.22	1.06	0.89	1.27
Number of oral exam services received	1.21	0.99	1.47	1.05	0.92	1.20	1.13	0.98	1.30
Number of diagnostic services received	1.16	0.97	1.40	1.08	0.95	1.23	0.99	0.86	1.14
Number of preventive services received	1.22	1.08	1.38	1.10	1.01	1.19	1.04	0.95	1.14
Number of restorative services received	0.93	0.75	1.17	0.96	0.84	1.10	0.99	0.85	1.16
Number of adjunctive services received	0.99	0.67	1.45	0.89	0.71	1.12	1.13	0.87	1.46
Number of surgical services received	1.22	0.72	2.08	1.22	0.85	1.76	0.81	0.52	1.26

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* Adjusted using children covariates (% of 2005 Medicaid covered, denial 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 only for children who had any dental utilization in 2005

*** Confidence intervals not containing 1.00 indicate a significant association with mothers' regular source of dental care.