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Caregiver Burdens and Preventive Dental Care for Children with Autism Spectrum disorder, developmental disability and/or mental health conditions: National Survey of CSHCN, 2009–10

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Abstract

Objective—The purpose of this study is to examine the burdens of caregivers on one perception of the need and receipt of preventive dental care for a subset of children with special health care needs—children with Autism Spectrum disorder, developmental disability and/or mental health conditions (CASD/DD/MHC).

Methods—The authors used the 2009–2010 National Survey of CSHCN. The survey included questions addressing preventive dental care and caregivers' financial, employment, and time-related burdens. The associations of these burdens on perceptions and receipt of preventive dental care use were analyzed with bivariate Chi square analyses and multinomial logistic regressions for CASD/DD/MHC (N=16,323).

Results—Overall, 16.3% of CASD/DD/MHC had an unmet preventive dental care need. There were 40.0% of caregivers who reported financial burden, 20.3% who reported employment burden, and 10.8% who reported time burden. A higher percentage of caregivers with financial burden, employment burden, and time-related burden reported that their CASD/DD/MHC did not receive

needed preventive dental care (14.1 %, 16.5%, 17.7% respectively) compared to caregivers without financial, employment, or time burdens (9.0%, 9.6%, 11.0% respectively). Caregivers with financial burden (adjusted multinomial odds ratio, 1.38 [95%CI: 1.02, 1.86]) and employment burden (adjusted multinomial odds ratio, 1.45 [95%CI: 1.02, 2.06]) were more likely to report that their child did not receive preventive dental care despite perceived need compared to caregivers without financial or employment burdens.

Conclusions for practice—Unmet needs for preventive dental care were associated with employment and financial burdens of the caregivers of CASD/DD/MHC.

Keywords

Dental utilization; Dental preventive care; Autism; Developmental Disabilities; Mental Health Conditions

Introduction

Dental caries is a leading cause of morbidity in children. It is the most common chronic childhood disease (Satcher 2000; Evans and Kleinman 2000) as it is 5 times more common than asthma, 7 times more common than hay fever, and 14 times more common than chronic bronchitis (Satcher 2000; Evans and Kleinman 2000). It is a complex, multifactorial disease involving the endogenous bacteria of the oral cavity undergoing an ecological shift in the biofilm at the tooth surface (Fejerskov 2004).

More than 19% of children, ages 2–19 years, in the US, have untreated dental caries and caries is greater in minority children, pre-school children, and children living in lower socioeconomic conditions (Centers for Disease Control and Prevention no date; Newacheck^a et al. 2000; Mouradian et al. 2000; Vargas et al., 1999). This high level of caries exists despite public health efforts for water fluoridation, sealant programs, education, and recommendations from dental associations for dental examinations by age 12 months or the eruption of the first tooth (Council on Clinical Affairs 2010). Early and routine preventive dental care visits are needed for caries-risk assessment and the development of individualized dental preventive programs (Council on Clinical Affairs 2010; American Academy of Pediatric Dentistry 2011). Nevertheless, many people are unaware of the importance of primary teeth and do not perceive a need for preventive dental care in young children.

Children with special health care needs (CSHCN) have or are “at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally”(McPherson et al. 1998). Preventive dental care is especially important for CSHCN due to their high caries burden (Fernandez et al. 2012), unmet dental needs (Lewis et al. 2005; Newacheck^b et al. 2000) high risk for incident dental caries (Centers for Disease Control and Prevention no date), and lower utilization with public insurance than with private insurance (Kenney et al. 2008).

Preventive dental care utilization analyses vary widely due to the many reporting measures, the use of different age groups, and changing trends. Researchers using 1996 Medical Expenditure Panel Survey data (1996) indicated that 62% of US children did not receive preventive dental care within the previous year (Lewis et al. 2007). With 2005–2008 Medical Expenditure Panel Survey data, researchers reported 79% of US children did not receive preventive dental care (Huebner et al. 2013). Researchers using data from the National Survey of Children's Health (2003–4) indicated that 28% of US children did not receive preventive dental care (Lewis et al. 2007).

Utilization percentages are also variable for CSHCN. Researchers using 2003–4 National Survey of Children's Health data indicated that dental visits were higher for CSHCN than other children, especially in the 3–5 year age group (Van Cleave and Davis 2008). However, researchers using 2005 Medical Expenditure Panel data indicated CSHCN had more dental visits involving restorative/surgical needs, but were *less likely to have preventive dental care visits* as compared with children who did not have special health care needs (Iida et al. 2010). In another study, utilization of preventive dental care was less in Medicaid-enrolled CSHCN than in non-Medicaid-enrolled CSHCN and the Medicaid-enrolled CSHCN had more than 9 times the odds of no preventive dental care than children who received needed medical care (Kenney et al. 2008).

For the current study we are interested in the preventive dental care utilization of a subset of CSHCN--children who have Autism Spectrum Disorder, developmental disability and/or mental health conditions (CASD/DD/MHC). Historically, grouping children with various disparate needs was useful to develop successful programs to address access to care, complex care, and disproportionate family burdens (Genetic Alliance 2013). There is now a need to understand specific needs for specific groups of CSHCN. The rationale for this study is that there is a need to know the level of preventive dental care use of CASD/DD/MHC to inform policies to increase preventive dental care for these children. The research hypotheses are that caregivers' 1) financial burden, 2) employment burden, and 3) time-related burden are associated with perceived need for preventive dental care and receipt of preventive dental care. The direction of the research hypotheses are that increased burdens of finance, employment, and time are positively associated with decreased receipt of preventive dental care.

Methods

This study received West Virginia University Institutional Review Board acknowledgement (protocol 1402212166). The conceptual framework for the study involves risk factors from the traditional Behavioral Model of Health Services Utilization (Andersen and Newman 1973) and the Behavioral Model for Vulnerable Populations (Gelberg et al. 2000; Small 2010). The traditional domains include the predisposing factors of demographics, health beliefs, social structure; enabling factors of personal/family resources and community resources; and, perceived health (Small 2010). The vulnerable domains included in this study are the predisposing factors related to living conditions (marital status of caregivers, poverty level, metropolitan/non-metropolitan situation, geographic region, and childhood characteristics); the enabling factor of available time (competing needs); and the perceived

need factor of health conditions specific to a vulnerable population (functional ability, and functional difficulty).

Data source

The 2009–2010 National Survey of CSHCN is a computer-assisted, random-digit telephone survey with a complex multistage design representative of the U.S. civilian non-institutionalized population with children ages 0 to 17 years with and without special health care needs. A total of 372,698 children were screened for special health care needs in the 50 states and DC from 196,159 households.

Study population

The study population consisted of the caregivers of CASD/DD/MHC. The inclusion was based upon endorsing question(s) in the survey in which they were asked if a doctor or health professional told them that their child had Autism Spectrum Disorder, any developmental delay, or intellectual disability or mental retardation. Their CASD/DD/MHC for this study, were ages 2–17 years. The final analytical sample of CASD/DD/MHC was 16,323.

Measures

Key outcome variable: Perceived need and Receipt of Preventive Dental Care

—The key outcome variable had four categories relating to the receipt of preventive dental care by the CASD/DD/MHC. The categories were:

- the caregivers *perceived no need* for preventive dental care and the child *did not receive* any preventive dental care;
- the caregivers *perceived a need* for preventive dental care, but the child *did not receive* preventive dental care;
- the child received *incomplete* preventive dental care (*perceived need* implied); and
- the child received *all* of the needed preventive dental care (*perceived need* implied).

Key independent variables: Caregiver Financial, Employment, and Time-related Burdens

—The key independent variables were the financial, employment, and time-related burdens of the caregivers. In this study the caregivers were parents or guardians of the CASD/DD/MHC. Financial burden was identified as spending more than \$1000 per year on healthcare for CASD/DD/MHC (yes, no, missing) based on a study in which the mean out of pocket expenditures for individuals with incomes 100–199% above Federal Poverty Level was \$822.59 (Galbraith et al. 2005) and a study in which mean out of pocket expenditures were \$1201 (Banthin 2008). Employment burden was a yes/no response to the question concerning the need for family members to cut back or stop working due to the CASD/DD/MHC health condition. Time-related burden corresponded with the caregiver providing over ten hours of care per week to the CASD/DD/MHC. The mean family time burden related to mental and physical disorders was 13.9 (SE=.6) hours per week in a global

analysis (Viana et al. 2013), however other research conducted in the US used 10 hours per week as caregiver burden for CSHCN (Chi et al. 2014).

Other variables—Other variables included in the analyses were the CASD/DD/MHC sex (male, female), CASD/DD/MHC age (2–5 years, 6–11 years, and 12–17 years), race/ethnicity (White, African American, Latino, other), marital status of the caregiver (married, separated/divorced/widowed, single, no parents in the household), education level of the caregiver (less than high school, high school, and greater than high school), poverty status (less than or equal to 100% of the federal poverty level, 101–200% federal poverty level, 201–400% federal poverty level, and greater than 400% FPL), health (medical) insurance at the time of the survey (yes, no), metropolitan status (metropolitan, non-metropolitan, not applicable), geographic region (Northeast, Midwest, South, and West), the CASD/DD/MHC functional ability (not affected, sometimes/very little affected, and always/usually affected), CASD/DD/MHC functional difficulties (none, one, two, three, four or more), Autism Spectrum Disorder (yes, no), developmental disorder (yes, no), mental health condition (yes, no), and caregiver reported time-related burden (yes, no, not applicable, missing). Although CASD/DD/MHC often have multimorbidities which may impact care, the data were not available concerning multimorbidities.

Statistical Analyses

A chi-square analysis was performed to assess the bivariate association between CASD/DD/MHC preventive dental care, and the financial and employment burdens of the caregivers. The analyses were extended to include the other variables listed above. A missing indicator was included with the Caregivers financial and time burden. Unadjusted and adjusted multinomial logistic regressions on preventive dental care were conducted. Logistic regression on dental visit(s), and perception of preventive dental care need among children with no preventive dental care visits were also analyzed. All analyses were also adjusted for the complex survey design of 2009–2010 National Survey of CSHCN using appropriate sampling weights. Analyses were conducted using SAS 9.3 using PROC SURVEYFREQ and SURVEYLOGISTIC procedures (SAS Inc., Cary, NC).

Results

A majority of the children in the sample were males (65.2%), white (62.6%), and had four or more functional difficulties (71.0%). The CASD/DD/MHC consisted of 16.0% children with Autism Spectrum Disorder, 40.3% with developmental disorders, and 84.8% with mental health conditions. There were overlapping conditions for CASD/DD/MHC as it is not unusual for CASD/DD/MHC to have multimorbidities.

Caregivers in the sample were primarily married (57.5%), had greater than high school education (66.3%), and had household incomes above 200% federal poverty level (51.8%). There were 40.0% of caregivers who reported financial burden, 20.3% who reported employment burden, and 10.8% who reported time-related burden. There were 83.7% of caregivers who reported that their CASD/DD/MHC received all needed preventive dental care.

Bivariate associations

Significant relationships were determined for the key independent variables, financial burden, employment burden, and time-related burden. Of the caregivers reporting a *financial burden*, 5.0% perceived that their CASD/DD/MHC did not need/nor received preventive dental care. Of the caregivers who perceived a need, 7.1% of the CASD/DD/MHC did not receive any preventive dental care; 7.0% received incomplete preventive dental care; and 80.9% received all needed preventive dental care.

Of the caregivers reporting an *employment burden*, 7.3% perceived that their CASD/DD/MHC did not need/nor received preventive dental care. Of the caregivers who perceived a need, 8.1% of the CASD/DD/MHC did not receive any preventive dental care; 8.4% received incomplete preventive dental care; and 76.1% received all needed preventive dental care.

Of the caregivers reporting a *time-related burden*, 7.7% perceived that their CASD/DD/MHC did not need/nor received preventive dental care. Of the caregivers who perceived a need, 6.0% of the CASD/DD/MHC did not receive any preventive dental care; 11.7% received incomplete preventive dental care; and 74.7% received all needed preventive dental care.

Other significant bivariate associations were with age, race/ethnicity, marital status of the caregivers, educational level of the caregivers, poverty status, health insurance, geographic region, CASD/DD/MHC functional ability, CASD/DD/MHC functional difficulty, Autism Spectrum Disorder, developmental disorder, and mental health condition. (Table 1).

Adjusted odds ratios (AOR)

For financial burden, there was no significant difference between caregivers with or without financial burdens when caregivers did not perceive a need/nor received preventive dental care for their CASD/DD/MHC (AOR=0.89 [95% CI = 0.66, 1.20]). However, caregivers who perceived a preventive dental need for their CASD/DD/MHC and had a financial burden were significantly different from caregivers who perceived a dental need for their CASD/DD/MHC but did not have a financial burden. Their children were more likely to have no care or incomplete care (AOR=1.38 [95% CI = 1.02, 1.86]; 1.54 [95% CI=1.02, 1.86], respectively) (Table 2).

For employment burden, there was no significant difference between caregivers with or without employment burden when the caregiver did not perceive a need/nor received preventive dental care for their CASD/DD/MHC (AOR=1.29 [95% CI = 0.92, 1.79]). However, caregivers who perceived a dental need for their CASD/DD/MHC and who had employment burden were significantly different from caregivers who perceived a dental need for their CASD/DD/MHC but did not have employment burden. Their children were more likely to have no care or incomplete care (AOR=1.45 [95% CI = 1.02, 2.06]; 1.01; 95% CI = 0.73, 1.41]).

For time-related burden, there were no significant differences between caregivers with or without time-related burden. When the caregiver did not perceive a need/nor received

preventive dental care for their CASD/DD/MHC, the AOR was 1.05 [95% CI = 0.68, 1.62]; for caregivers who perceived a dental need for their CASD/DD/MHC and had time-related burden, the AOR for no care was 0.80 [95% CI = 0.54, 1.18] and the AOR for incomplete care was 1.44 [95% CI = 0.94, 2.21].

Discussion

CSHCN, in general, have many barriers to the receipt of preventive dental care. In this study, 16.3% of the CASD/DD/MHC were in need of preventive dental care. The results support researchers of another study who reported 20% of CSHCN had unmet dental needs (Nelson et al. 2011). In that study, children with craniofacial anomalies were more likely to have unmet dental needs, and children with cerebral palsy, autism, developmental delay and Down Syndrome were more likely to have treatment complications and more difficulty with access to care (Nelson et al. 2011). Potential explanations for why some caregivers do not perceive a need for preventive dental care may involve differences in handling the complexity of the child's medical problems which overshadows concerns for preventive dental care, including problems such as a child's dysphagia, and gastroesophageal reflux (Park and Sigal 2008; Toder 2000). Nevertheless, caregivers of some children, such as children with cystic fibrosis, metabolic disorders or hemophilia reported fewer barriers (Nelson et al. 2011) indicating that some CSHCN may have utilization similar to the general population.

Similarly, the results of this study support the results of other researchers who have indicated positive trends in financial and employment burdens of caregivers of CSHCN (Newacheck and Kim 2005; Ghandour et al. 2014). Caregivers in this study who perceived needed dental care for their CASD/DD/MHC had financial and employment burdens in accessing care. Financial burden was stronger for accessing all needed preventive dental care than accessing incomplete preventive dental care (AOR=1.54 and 1.38, respectively), while employment burden was more modest (AOR=1.01 and 1.45, respectively). Time-burden did not reach significance in this study, and although not a focus of the study, the major factor affecting receipt of preventive dental care in this study was poverty level.

Caries risk mechanisms for CSHCN

Some CSHCN are at increased risk for dental disease through multiple mechanisms—exposure to medications high in sugar, the need for assistance in daily oral infection control (brushing/flossing), reduced ability to clear food from the mouth, reduced salivary function from the disorder or induced by medication, dietary preference for carbohydrates, the need for pureed food or a liquid diet, and oral care aversion (Norwood and Slayton 2013). Oral care aversion may motivate some caregivers to seek dental care for urgent needs, but forego routine preventive dental care. Caregivers may prefer general anesthesia to protective stabilization in dental care, and the perception of need for routine preventive dental care may be diminished by the concern about general anesthesia (Park and Sigal 2008).

More caregivers of CASD/DD/MHC with health insurance reported their children received all preventive dental care compared to caregivers with no health insurance (84.4% as compared with 53.6%). The interviewers queried the caregivers as to whether or not they

had health insurance (not specifically dental health insurance) at the time of the survey. The findings confirm the importance of access to care through health insurance coverage. Although many health insurance plans do not provide dental care, many public insurance plans often do cover dental care for children. However, even with adequate health insurance coverage, other barriers remain for the children to receive needed preventive dental care.

The differences among health insurance policies, availability, and the adequacy of dental coverage are important topics for future study. Although there were 60.1% of caregivers without health insurance who reported a financial burden, there were also 39.1% of caregivers with health insurance who also had a financial burden which affected the CASD/DD/MHC receipt of preventive dental care.

This study has limitations. There is the potential for social desirability bias, in that the respondents may have been more likely to respond in a manner to appear more positive to the interviewer. Participants may also have recall bias, in which they did not accurately remember their dental visits or perceptions. Misclassification bias with potential under or over reporting of ASD/DD/MHC is possible if there were an inaccurate response to the child's condition since the inclusion was based upon endorsing question(s) in the survey in which they were asked if a doctor or health professional told them that their child had Autism Spectrum Disorder, any developmental delay, or intellectual disability or mental retardation.

This study's strengths are its large sample size, its national scope, the validity and reliability of the National Survey of CSHCN, and the number of variables that were used in the adjusted analyses. Since this study has a cross-sectional design, this study cannot determine temporality or causation.

Conclusions

Implications for policy

The results from this study are that 83.7% of the CASD/DD/MHC did have all needed preventive dental care. There is a significant number of caregivers who need additional help in securing the dental care, or of becoming aware of the importance of preventive dental care. In addition to the two significant key variables considered in this study (financial and employment burdens), the results also included lack of health insurance and poverty as being influential in the receipt of needed preventive dental care and which have been shown as influential elsewhere (Kenney et al 2008). Policies to prevent dental problems in CASD/DD/MHC would not only help the children and their families, but would also help society by keeping the costs of needed health care lower, and keeping the burden on employment lower. Poor oral health has been associated with poor quality of life, and systemic illness (Norwood, and Slayton 2013). There is a significant need for all children to have their preventive dental care needs met and for caregivers to recognize and act upon those needs.

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Significance

What is already known on this subject?

The barriers to dental care for children with special healthcare needs are substantial and the subset of CASD/DD/MHC are particularly vulnerable and have significantly more dental needs than children without special healthcare needs.

What this study adds?

The barriers specifically for preventive dental care needs of CASD/DD/MHC were not previously examined. Caregiver financial and employment burdens are barriers for preventive dental care for these children. Policymakers may wish to improve access to care for CSHCN by providing financial support/tax credits for oral health care as well as services for homecare of children for parents/guardians to continue to be employed.

Table 1
Description of Caregiver of Child with Autism, Developmental Disability and/or Mental Health Condition by Caregiver Perceived Preventive Dental Care Need for child and Receipt of Preventive Dental Care by child National Survey of Children with Special Health Care Needs, 2009–2010

	No perceived need No receipt of preventive dental care		Perceived Need No receipt of preventive dental care		Perceived need Received incomplete preventive dental care		Perceived need Received all preventive dental care		Sig
	N	Wt. %	N	Wt. %	N	Wt. %	N	Wt. %	
ALL	764	5.4	774	5.8	703	5.1	14,082	83.7	
Financial Burden									***
Yes	338	5.0	460	7.1	403	7.0	6,413	80.9	
No	535	6.0	424	4.9	391	4.1	9,347	85.0	
Missing	22	6.7	7	2.4	9	3.2	210	87.7	
Employment Burden									***
Yes	187	7.3	234	8.1	208	8.4	2,645	76.1	
No	697	5.2	651	5.1	587	4.5	13,224	85.2	
Time Burden									***
Yes	115	7.7	123	6.0	129	11.7	1,381	74.7	
No	274	4.6	300	5.6	277	5.4	5,412	84.4	
NA	478	5.7	449	5.8	374	4.0	8,914	84.5	
Missing	28	8.1	19	3.6	23	4.3	263	83.9	
Marital Status									***
Married	510	5.0	456	4.8	406	3.8	10,454	86.4	
Sep/Div/Widowed	159	5.0	223	7.8	184	6.7	2,700	80.5	
Single	143	8.0	121	6.0	147	8.6	1,679	77.4	
No Parents in HH	67	7.5	78	6.4	56	5.8	978	80.3	
Missing	16	6.5	13	6.0	10	7.7	159	79.8	
Education									***
LT High School	109	10.2	79	7.8	63	6.7	864	75.3	
High School	218	7.3	190	6.3	156	6.1	2,528	80.3	
Above High School	568	4.2	622	5.1	584	4.8	12,578	85.9	
Poverty Status									***
<100 % FPL	267	7.5	266	7.8	238	7.7	2,915	77.0	

	No perceived need No receipt of preventive dental care			Perceived Need No receipt of preventive dental care			Perceived need Received incomplete preventive dental care			Perceived need Received all preventive dental care			Sig
	N	Wt. %		N	Wt. %		N	Wt. %		N	Wt. %		
100-200% FPL	223	5.9		288	7.2		211	5.9		3,144	80.9		
200-300% FPL	262	5.5		241	6.1		247	5.6		4,916	82.7		
GE 400% FPL	143	3.4		96	1.6		107	1.7		4,995	93.2		
Health Insurance													***
Yes	842	5.5		786	5.0		737	5.0		15,627	84.4		
No	50	8.5		105	25.1		64	12.8		325	53.6		

Note: Based on 16,323 children with special healthcare needs and who had Autism Spectrum Disorders, developmental disability and/or mental health conditions and no missing values for the perceived need and receipt of preventive dental care. The asterisks represent significant group differences in need of and receipt of preventive dental care based on chi-square tests.

Abbreviations: FPL=federal poverty level; HH=household; LT: Less than; Sep/Div=separated or divorced; wt: Weighted

p .001;

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.001 p < .01;

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.01 p < .05

Table 2

Adjusted Odds Ratio (AOR) and 95% Confidence Intervals (CI) of Caregiver Characteristics from Multinomial Logistic Regression on Perceived Preventive Dental Care Need and/or Receipt of Preventive Dental Care among Children with Autism, Developmental Disability and Mental Health Conditions National Survey of Children with Special Health Care Needs, 2009–2010

	No perceived need no receipt of preventive dental care			Perceived need no receipt of preventive dental care			Perceived need received incomplete preventive dental care		
	AOR	95% CI	Sig	AOR	95% CI	Sig	AOR	95% CI	Sig
Financial Burden									
Yes	0.89	[0.66, 1.20]		1.38	[1.02, 1.86]	*	1.54	[1.18, 2.01]	**
No (ref)	1.00			1.00			1.00		
Missing	0.69	[0.28, 1.69]		0.12	[0.02, 0.86]	*	1.09	[0.30, 4.02]	
Employment Burden									
Yes	1.29	[0.92, 1.79]		1.45	[1.02, 2.06]	*	1.01	[0.73, 1.41]	
No (ref)	1.00			1.00			1.00		
Time Burden									
Yes	1.05	[0.68, 1.62]		0.80	[0.54, 1.18]		1.44	[0.94, 2.21]	
No (ref)	1.00			1.00			1.00		
Not Applicable	1.15	[0.85, 1.54]		1.12	[0.84, 1.49]		0.80	[0.58, 1.09]	
Missing	1.27	[0.50, 3.20]		0.60	[0.29, 1.26]		0.69	[0.30, 1.56]	
Marital Status									
Married (Ref)	1.00			1.00			1.00		
Sep/Div/Widowed	1.07	[0.75, 1.53]		1.47	[1.08, 2.00]	*	1.43	[0.96, 2.11]	
Single	1.27	[0.81, 2.00]		1.19	[0.77, 1.84]		1.77	[1.19, 2.62]	**
No Parents in HH	1.19	[0.67, 2.12]		1.34	[0.77, 2.33]		1.50	[0.83, 2.70]	
Missing	0.27	[0.06, 1.21]		3.31	[1.07, 10.26]	*	2.36	[0.50, 11.04]	
Education									
LT High School	2.35	[1.48, 3.71]	***	1.27	[0.78, 2.06]		1.06	[0.67, 1.69]	
High School	1.58	[1.13, 2.21]	**	1.11	[0.81, 1.53]		0.91	[0.65, 1.29]	
Above HS (Ref)	1.00			1.00			1.00		
Poverty Status									
<100% FPL	1.38	[0.83, 2.30]		4.45	[2.67, 7.40]	***	3.40	[2.11, 5.49]	***

	No perceived need no receipt of preventive dental care			Perceived need no receipt of preventive dental care			Perceived need received incomplete preventive dental care		
	AOR	95% CI	Sig	AOR	95% CI	Sig	AOR	95% CI	Sig
100–200% FPL	1.15	[0.72, 1.83]		3.78	[2.33, 6.14]	***	3.12	[2.01, 4.82]	***
200–300% FPL	1.55	[1.03, 2.32]	*	3.64	[2.26, 5.87]	***	2.90	[1.82, 4.63]	***
400% FPL (Ref)	1.00			1.00			1.00		
Health Insurance									
Yes	2.29	[1.29, 4.09]	**	6.23	[3.90, 9.94]	***	2.81	[1.68, 4.68]	***
No (Reference)	1.00			1.00			1.00		

Note: Based on 16,323 children with special healthcare needs and who had Autism Spectrum Disorders, developmental disability and/or mental health conditions and no missing values for the perceived need and receipt of preventive dental care. Reference group for the dependent variable: Children who received all needed preventive dental care. The regression model also controlled for the children's sex, age, race/ethnicity, resident status (metro/non-metro), region of residence, type of special health care needs (autism, developmental disability, mental health conditions, presence of physical conditions, and functional ability).

The asterisks represent significant group differences in need of and receipt of preventive dental care compared to the reference group.

Abbreviations: ref=reference category; FPL=federal poverty level; HH=household; LT: Less than; HS=High School; Sep/Div=separated or divorced.

p .001;

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.001 p < .01;

*
.01 p < .05