

Background

- Autism spectrum disorder (ASD) is a neurological and developmental disorder defined by impaired communication and interactive abilities, as well as repetitive behaviors and interests.
- The prevalence of ASD has been increasing, such that 2.5% of U.S. children are now believed to have the condition.
- Notably, ASD has been shown to be associated with poor oral health.
- The purpose of this study was to evaluate the effect of autism severity and medical homes on the dental care access and oral health of children with ASD.

Methods

- The data for this study was obtained from the 2017-2018 National Survey of Children's Health (NSCH) conducted by the U.S. Census Bureau.
- From the 161 NCHS survey questions, we selected responses to 10 survey questions that sought information on the children's dental care and oral health status
 - During the past 12 months, did this child see a dentist or other oral healthcare provider for any kind of dental or oral healthcare? If yes, did this child see a dentist or other oral healthcare provider for preventive dental care, such as check-ups, dental cleanings, dental sealants, or fluoride treatments?
 - Did the child have a dental X-ray during the past 12 months?
 - During the past 12 months, was there any time when this child needed dental healthcare, but it was not received?
 - How would you describe the condition of this child's teeth?
 - During the past 12 months, has this child had frequent or chronic difficulty with toothaches, decayed teeth or cavities?
 - Has a doctor or other healthcare provider ever told you that this child has autism or autism spectrum disorder (ASD)? If yes, is it mild, moderate, or severe?
 - Is this child currently taking medication for autism, ASD, Asperger's disorder, or pervasive developmental disorder (PDD)?
 - At any time during the past 12 months, did this child receive behavioral treatment for autism, ASD, Asperger's disorder, or PDD, such as training or an intervention that you or this child received to help with his or her behavior?
 - Overall, how satisfied are you with the communication among this child's doctors and other healthcare providers?
 - Does care meet criteria for a medical home?
- Chi-squared tests analyzed the univariate associations between categorical variables.
- Multiple logistic regressions used outcomes such as: preventive dental visit, dental radiograph, and foregone dental visit and the following covariates: ASD severity, race, poverty level, toothache, cavities, and parents' education level.

Results

- 44,952 children were included in the study cohort, of which 2.9% had ASD.
- Table 1 stratifies the cohort by demographics and ASD severity.
- Male gender was more prevalent in the ASD group as compared to the control (51% in the control group, 76.0% of the mild, 82.2% of the moderate, and 79.3% of the severe autism groups).
- Children with ASD were more likely to be at or below 199% of the Federal Poverty Level, and they were more likely to be Hispanic or Black.

Table 1. SURVEY DEMOGRAPHIC DATA OF THE POPULATION USED IN THE STUDY

Demographic Data	No ASD Diagnosis	ASD Severity		
		Mild	Moderate	Severe
Age (years ± SD)*	10.7(±4.4)	11.8(±3.9)	11(±4.1)	11.4(±4.4)
Male gender (col%)*	51.0	76.0	82.2	79.3
Poverty level (col%)*				
0-199% FPL	27.8	31.6	40.7	50.3
200-299% FPL	15.9	15.4	17.8	15.9
300-399% FPL	14.5	15.4	12.2	14.5
400% + FPL	41.9	37.5	29.4	19.3
Race (col%)*				
White	69.1	72.4	65.8	49.7
Black	11.6	10.3	15.8	17.2
Other: Hispanic	6.5	5.7	5.5	13.1
Other: Non-Hispanic	12.7	11.5	13.0	20.0
Parent: college education or above (col%)*	60.3	59.5	51.0	46.9
Current insurance (col%)*				
Public	19.3	26.5	36.0	44.8
Private	71.3	59.5	42.7	28.3
Public + Private	3.5	8.7	17.0	21.4
Uninsured	4.4	3.9	3.0	4.1

- Table 2 compares oral health, dental care, autism treatment, and care coordination for children with different levels of ASD severity.
- Poor teeth, caries, and toothaches were more common as ASD severity increased.
- Preventive dental visits, cleanings, radiographs, fluoride applications, medical home access, and care coordination were inversely associated with ASD severity.

Table 2. MEASURES OF HEALTH

Health measures	No ASD Diagnosis	ASD Severity		
		Mild	Moderate	Severe
Oral Health (col%)				
Teeth in poor condition*	4.2	6.6	14.4	18.9
Cavities present*	10.6	12.5	17.9	18.4
Toothache present*	2.9	4.1	6.1	7.0
Dental Care (col%)				
Had preventative visit*	88.9	88.4	84.0	73.1
Received radiographs*	56.4	59.8	52.0	28.7
Forgone needed dental care*	1.2	2.0	3.5	8.3
Autism Treatment and Care Coordination (col%)				
Receiving ASD medications*	-	21.1	36.6	37.8
Receiving behavioral therapy*	-	49.3	71.9	73.6
Receiving coordinated care within medical home*	54.0	45.1	33.6	32.4
Satisfied with communication among providers*	74.7	60.0	48.6	46.4

- Regression analysis demonstrated that the odds of a preventive dental visit decreases significantly as autism severity increases.
- However, moderately and severely autistic children who took medications, and moderately autistic children receiving behavioral therapy, had similar odds of a preventive visit compared to neurotypical children.
- The inverse relationship between autism severity and preventative visits disappeared when children had a medical home.

TABLE 3 THE EFFECT OF ASD TREATMENT AND MEDICAL HOME ON DENTAL CARE OUTCOMES

Dental Care Outcomes	Additional Treatment	Autism Severity		
		Mild	Moderate	Severe
Preventative Dental Visit	All children with ASD diagnosis ASD Children	1	0.73*	0.39*
	Receiving Medication	2.83*	1	1
	Receiving Behavioral Therapy	1	1	0.41*
	Having a Medical Home	1	1	1
Forgone Dental Visit	All children with ASD diagnosis ASD Children	1	1.95*	5.20*
	Receiving Medication	1	1	8.52*
	Receiving Behavioral Therapy	1	1	4.80*
	Having a Medical Home	1	1	1
Took Radiographs	All children with ASD diagnosis ASD Children	1	1	0.31*
	Receiving Medication	1	1	0.37*
	Receiving Behavioral Therapy	1	1	0.33*
	Having a Medical Home	1	1	0.40*

Discussion/Conclusions

- As ASD severity increases, oral health and preventive dental care worsen.
- ASD treatment reduces the negative effect of ASD on preventive dental visits.
- Autism treatment, medical homes, and care coordination mildly reduce the link between ASD severity and access to dental radiographs.
- Medical homes and care coordination completely erased the link between ASD and preventive dental visits, even for children with severe ASD.
- Medical homes and care coordination are more effective than ASD treatment in mitigating the association between ASD severity and preventive dental visits.

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