Impact of Early Autism Therapy on Caries Incidence

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Introduction

According to the Centers for Disease Control, the prevalence of Autism Spectrum Disorder (ASD) is approximately one in 36 children (Centers for Disease Control and Prevention [CDC], 2023). Children with autism are more likely to suffer from certain dental conditions, such as incidence of caries, due to behavioral, sensory and psychological issues. Children with ASD may have poor oral hygiene due to their inability to brush, certain food preferences, and due to side effects of medications (Nowak & Casamassimo, 2018). The aim of this study was to investigate whether early behavioral therapy, such as Applied Behavior Analysis (ABA), early in a child's life improves their social behavior and in turn has a positive effect on oral health.

A survey was distributed to parents of children with an autism spectrum diagnosis and are aged 12 years and older. The patient population was limited to Children's Dental Specialists of Hazel Park. Parents answered several questions about the timing of their children's diagnosis and therapies that they engage in. For each of these patients, a DMFT (decayed, missing, and filled primary teeth) score was calculated.

Purpose: The purpose of this study was to investigate whether early autism therapy impacts caries incidence in children with autism. The hypothesis is that engagement in autism therapy early in life, before 6 years of age, has a positive impact on oral health in these patients and decreases incidence of caries.

Methods

Patients participating in study were chosen based upon the following criteria: children diagnosed with autism spectrum disorder ages 12 and older. This study was conducted during the time frame of January 6th 2025 to March 6th 2025 and participants were recruited at Children's Dental Specialists of Hazel Park. Parents of these patients were given a questionnaire asking the age their child was diagnosed with autism, whether or not the child currently attends or attended an autism therapy program, the age their child began autism therapy, other concurrent medical conditions, difficulty with dental appointments, how often their child brushes their teeth and whether aid is necessary, age of the child's first dental visit, and whether there is another child in the family with an autism diagnosis. DMFT score was then calculated for each patient participating in the study by examining the patient's dental chart of their last periodic exam.

Results

The study included 24 subjects, all diagnosed with autism and aged 12 years or older. Data analysis involved calculating averages in age, DMFT, age diagnosed, age of first dental visit, gender, therapy attendance, teeth brushing frequency and aid, and presence of older child with autism. The various behavioral programs attended by participants were also analyzed. The Shapiro Wilk test was utilized to determine significance between DMFT score and age of diagnosis.

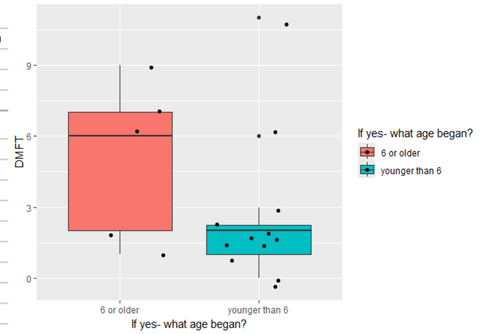
Mean DMFT score found within the study group was 4.2, mean age of diagnosis was 57 months (4.8 years) and 67% of participants attended or currently attend a behavioral therapy program. The analysis suggests that the distribution of DMFT scores is not normal. A statistically significant association was found between DMFT scores and age of diagnosis with a P-value of 0.005 (rho ~ 0.35), suggesting there is an association between DMFT scores and age of initiating therapy.

Variable	Mean (SD);
Age	14.33 (2.16)
DMFT	4.2 (4.8)
Age diagnosed (Months)	57 (58)
age of first dental visit?	3.76 (2.01)

Variable	N (%)
Gender	
F	9 (38%)
M	15 (63%)
DMFT	4.2 (4.8)
Age diagnosed (Months)	57 (58)
age of first dental visit?	3.76 (2.01)
Attended/ currently attends therapy?	
no	8 (33%)
yes	16 (67%)
Difficult time with dentist?	
no	6 (25%)
yes	18 (75%)
How often brush teeth?	
0 times per day	1 (4.2%)
1 times per day	11 (46%)
2 times per day	6 (25%)
2+ Times per day	6 (25%)
Help child brush teeth?	
no	5 (21%)
yes	19 (79%)
older child with autism?	
no	22 (92%)
yes	2 (8.3%)

† Mean (SD); n (%)

Correlation analysis between DMFT and Age of Initiating Therapy



Box plot above showing: There is a significant difference in the distribution of DMFT score in two age groups.

Program	N = 15†
What program?	
ABA	7 (47%)
ABA, OT	2 (13%)
MISD Medical Homeschool	1 (6.7%)
OT	1 (6.7%)
Patterns Ben Services	1 (6.7%)
school	1 (6.7%)
School program	2 (13%)

† n (%)

Discussion

The results of this study demonstrated a significant but moderate correlation between early engagement in behavioral therapy, such as Applied Behavior Analysis (ABA), prior to the age of six and improved oral health outcomes in children with ASD. These results offer a preliminary support for the hypothesis and emphasize the complexity in relationship between early autism therapy and long-term dental health. Due to the limited sample size, the data is not enough to draw definitive conclusions and indicate further research is needed.

A notable limitation of this study was the participant selection. The sample included children aged 12 and older who have an autism diagnosis. This age range is valuable, but may also introduce confounding variables. Factors such as long-term dietary habits, previous dental experiences, and presence of other medical conditions may influence and obscure potential benefits of early intervention with behavioral therapy and ultimately increase DMFT score.

In addition, data was collected relying on parent-reported questionnaires which may introduce bias. The differing perceptions parents have of their child's oral health and inconsistencies in dental routine due to their child's sensory difficulties could impact accuracy of their responses. The study also did not account for the differing quality or intensity of the autism therapies the children were involved with. These may also greatly affect the outcomes. The time frame of the study was only a span of several months, limiting the ability to draw a definitive conclusion. A longer study duration over several years may create a more comprehensive understanding on how early therapy intervention impacts oral health. The metric used to evaluate oral health, DMFT scores, also only offered a snapshot of overall oral health. Future research on this topic may benefit from including qualitative assessments of specific oral hygiene practices, challenges children with ASD face during the dental appointment, and the psychological aspects that disproportionally impact dental fear and experience in these children.

Conclusions

In conclusion, although the sample size was small, the results of this study did in fact support the relationship between early behavioral therapy and improved oral health outcomes in children with autism and the hypothesis was supported. Nevertheless, the association was found to be moderate and there is a need for additional expanded studies with more rigorous methodologies to better evaluate the myriad of factors that impact the relationship between oral health and early participation in behavioral therapy in children diagnosed with ASD.

References

Centers for Disease Control and Prevention. (2023). Data and statistics on autism spectrum disorder. https://www.cdc.gov/ncbddd/autism/data.html

Nowak, A. J., & Casamassimo, P. S. (Eds.). (2018). The handbook of pediatric dentistry (5th ed.). American Academy of Pediatric Dentistry.