CASE SERIES

Children with Autism Spectrum Disorder Are Able to Maintain Dental Skills: A Two-Year Case Review of Desensitization Treatment

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Abstract: ***Purpose:*** *The purposes of this study of children with autism spectrum disorder (ASD), who had successfully accepted a dental examination seated in a dental chair following desensitization interventions, were to: (1) determine if ability to accept an examination was maintained two years following initial success; (2) quantify new dental skills acquired; and (3) analyze the use of advanced behavior guidance techniques.* ***Methods****: This retrospective two-year case series included 138 ASD children. Data were obtained from dental records. Descriptive statistics were calculated, and Fisher's exact test was used for comparisons of interest.* ***Results:*** *Most children (92 percent) maintained the ability to receive minimum threshold examinations once the initial exam had been achieved. New basic dental skills attained by most children included receiving toothbrush prophylaxis (83 percent) and accepting fluoride varnish (77 percent). Few children required oral sedation or protective stabilization, but 22 percent received general anesthesia.* ***Conclusions:*** *Most children with autism spectrum disorder who learned to accept an examination maintained that skill over time, and many accepted toothbrush prophylaxis and fluoride varnish. Sensory-invasive skills, such as radiographs and rubber cup prophylaxis, were acquired with lower frequency. Therefore, when treating ASD patients, it is important to consider that some will require advanced behavior guidance techniques.* *(Pediatr Dent 2019;41(5):397-403) Received March 11, 2019 / Last Revision June 26, 2019 / Accepted June 30, 2019*

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Autism Spectrum Disorder (**ASD**) is a lifelong developmental disability that affects one in 59 children.[1] ASD patients have deficits in social interaction and communication and restrictive, repetitive patterns of behavior.[2] These aspects of ASD can make dental appointments unpredictable. Consequently, the unmet dental need in the ASD community is 12 to 15 percent, compared to five to seven percent for typically developing children.[3-5] The challenging behavior of ASD children often results in use of advanced behavior guidance techniques (**ABGTs**), such as protective stabilization, oral sedation, and general anesthesia to provide dental care.[6-8]

In recent years, several behavior management techniques from the educational setting have been adapted for dental care.[2,8,9] The goal of these methods is to help ASD children learn the skills necessary to receive oral care. Treatment protocols that have been employed include: visual preparation aids[10-13]; applied behavior analysis[2]; developmental individual differences; relationship-based approaches[14]; treatment and education of autistic and related communication-handicapped children[15]; individualized reinforcement[16,17]; sensory adapted dental environments[18]; and progressive desensitization with individualized reinforcement.[19] Due to the wide-ranging presentation of ASD; clinicians treating ASD children should involve the patient's family in therapy when possible.[20]

Many ASD children can learn to accept dental examination through implementation of dental-oriented teaching protocols that employ progressive desensitization with individualized reinforcement.[19] In a previous report from our clinic describing a case review of 168 ASD children participating in a dental desensitization program, 87.5 percent of children successfully received minimum threshold exams (**MTE**), defined as an examination with an intraoral mirror while seated in a dental chair.[19] The research suggests that dental desensitization provides an avenue for some ASD children to receive their first successful MTE; however, it is unknown if the ability to accept a visual dental examination while seated in a dental chair is maintained over time.

The purposes of this study of children with autism spectrum disorder, who had successfully accepted a dental examination seated in a dental chair following desensitization interventions, were to: (1) determine if ability to accept an examination was maintained two years following initial success; (2) quantify new dental skills acquired; and (3) analyze the use of advanced behavior guidance techniques of general anesthesia, oral sedation, and/or protective stabilization during the study period.

Methods

Study design and sample. This retrospective case series consisted of 138 children who participated in a dental desensitization program for ASD children at the University of Washington's

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Center for Pediatric Dentistry between January 2012 and January 2017. All children with a diagnosis of ASD who attended the university clinic during this time had the ability to participate in the autism desensitization program. Our initial desensitization study assessed a group of 168 children who were enrolled in the program.[19] The present study followed-up on the initial investigation, assessing 138 of the original 168 children who had completed an MTE. The records for children who had achieved an MTE were reviewed for the two-year period following their initial successful exam. Criteria for inclusion were: (a) ASD diagnosis by a physician; (b) four to 21 years old; (c) completed parent questionnaire prior to initial dental visit; (d) successful initial MTE, defined as an examination with an intraoral mirror while seated in a dental chair; and (e) continued attending dental appointments at the study clinic during the two-year period following a child's initial MTE. Subjects with incomplete chart entries and patients who did not attend dental visits at the study clinic within the two-year period following their initial MTE were excluded. This chart review study was approved by the institutional review board at the University of Washington.

Collection and analyses of data. Subjects in the study and the dental desensitization program at the clinic have been described in previous reports.[14,19] All subjects had: an initial 34-item preappointment parent questionnaire describing the child's behavioral characteristics, self-care abilities, and communication skills; behavior ratings for several aspects of all desensitization visits assigned by the dentist who performed the care (from a score of one, equating to "completely unable," to a score of five, equating to "able without difficulty"); and achieved successful MTE, defined as the child received a dental examination with a mouth mirror while seated in a dental chair with a behavior score of three ("able with moderate difficulty") or higher.

The present study added to the information collected about these patients. For each follow-up visit after the initial MTE, the authors conducted a detailed chart abstraction to determine: (1) the child's ability to accept an MTE (yes/no); (2) the child's ability to complete any additional diagnostic, preventive, or restorative dental procedures with a score of three or greater or a + or ++ using the Frankl behavior scale (new dental skills measured included toothbrush prophylaxis, rubber cup prophylaxis, dental scaling, fluoride varnish application, panoramic radiograph, intraoral radiographs, sealants, other preventive care, and restorative dental treatment); (3) use of general anesthesia (**GA**), oral sedation, and protective stabilization; (4) the total number of visits to the study clinic after achieving an MTE; and (5) whether each child was able to receive an MTE at the final visit in the two-year period following the initial MTE.

Clinical procedures. Study participants were treated by pediatric dental residents who were supervised by residency program faculty. All residents had didactic and clinical training with calibration in treating and behavior analysis of patients in the ASD desensitization clinic. The author with whom the present study has followed up on provided the training of residents. A faculty member who also had received training in the desensitization clinic protocols supervised each resident.

Table 1. ASSOCIATION OF DEMOGRAPHIC AND TREATMENT VARIABLES FOR CHILDREN WITH AUTISM SPECTRUM DISORDER AND THEIR ABILITY TO RECEIVE A MINIMUM THRESHOLD EXAM (MTE) AT THE END OF THE STUDY PERIOD

Baseline demographic	Total (N=138) N (%)	Child ability to maintain MTE at end of study period		
		Yes (N=127) N (%)	No (N=11) N (%)	*P*-value*
Age (years)				
4-6	**55 (40)**	50 (39)	5 (45)	0.92
7-12	**60 (43)**	55 (43)	5 (45)	
13-18	**23 (17)**	22 (17)	1 (9)	
Sex				
Male	**114 (83)**	107 (84)	7 (64)	0.10
Female	**24 (17)**	20 (16)	4 (36)	
Race				
Caucasian	**69 (50)**	62 (49)	7 (64)	>0.99
Asian	**15 (11)**	14 (11)	1 (9)	
African American	**13 (9)**	12 (9)	1 (9)	
Other/multiple	**24 (17)**	22 (17)	2 (18)	
Unanswered	**17 (12)**	17 (13)	0 (0)	
Insurance				
Public	**76 (55)**	71 (56)	5 (45)	0.61
Private	**60 (43)**	54 (43)	6 (55)	
None	**2 (1)**	2 (2)	0 (0)	
Lives with				
Parent(s)	**131 (95)**	120 (94)	11 (100)	>0.99
Other	**4 (3)**	4 (3)	0 (0)	
Unanswered	**3 (2)**	3 (2)	0 (0)	
Baseline co-morbid medical condition variables				
Sensory sensitivities	**67 (49)**	62 (49)	5 (45)	0.86
Anxiety	**46 (33)**	45 (35)	1 (9)	0.18
Sleep disorder	**31 (22)**	30 (24)	1 (9)	0.32
Gastrointestinal problems	**24 (17)**	24 (19)	0 (0)	0.21
Seizures	**9 (7)**	9 (7)	0 (0)	>0.99
Baseline history of therapy variables				
Any therapy	**110 (80)**	99 (78)	11 (100)	0.21
Speech therapy	**102 (74)**	92 (72)	10 (91)	>0.99
Occupational therapy	**81 (59)**	72 (57)	9 (82)	0.72
Complementary and alternative medicine	**15 (11)**	15 (12)	0 (0)	0.35
Behavioral therapy	**65 (47)**	59 (46)	6 (55)	0.99
Physical therapy	**27 (20)**	26 (20)	1 (9)	0.68
Number of types of therapies child receives				
0-1	**35 (25)**	33 (26)	2 (18)	0.27
2-3	**73 (53)**	64 (50)	9 (82)	
4-5	**18 (13)**	18 (14)	0 (0)	
Unknown	**12 (9)**	12 (9)	0 (0)	
Use of advance behavior guidance techniques during study period				
Protective stabilization	**3 (2)**	3 (2)	0 (0)	>0.99
Sedation	**2 (1)**	2 (2)	0 (0)	>0.99
General anesthesia	**30 (22)**	26 (20)	4 (36)	0.25

* Fisher's exact test overall *P*-value.

Each patient in the desensitization program had an individualized care plan that included goal setting for future visits and pre-visit home preparation. At each visit, behavior guidance techniques, such as voice control and positive reinforcement, were incorporated into the dental desensitization program, with successive approximation toward set goals. The results of the visits were recorded using numerical scales; complete clinical protocols are described in the previous study.[19]

Statistical analysis. Frequencies and percentages were calculated for categorical variables. Fisher's exact test was used to evaluate the association between predictors of interest and ability to receive a follow-up MTE.

Table 2. ASSOCIATION OF BEHAVIORAL VARIABLES FOR CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD) AND THEIR ABILITY TO RECEIVE A MINIMUM THRESHOLD EXAM (MTE) AT THE END OF THE STUDY PERIOD

Behavioral variables	Total (N=138) N (%)	Child ability to maintain MTE at end of study period		
		Yes (N=127) N (%)	No (N=11) N (%)	*P*-value*
Caregiver-rated ASD severity				
Mild	**32 (23)**	30 (24)	2 (18)	0.83
Moderate	**58 (42)**	53 (42)	5 (45)	
Severe	**26 (19)**	23 (18)	3 (27)	
Missing	**22 (16)**	21 (17)	1 (9)	
Level of challenging behaviors				
Low	**69 (50)**	63 (50)	6 (55)	>0.99
Moderate	**57 (41)**	53 (42)	4 (36)	
High	**10 (7)**	10 (8)	0 (0)	
Unknown	**2 (1)**	1 (1)	1 (9)	
Social abilities				
Cooperate during simple activities	**123 (89)**	112 (88)	11 (100)	0.61
Be involved in group activities	**91 (66)**	86 (68)	5 (45)	0.18
Engage in shared activities	**123 (89)**	113 (89)	10 (91)	>0.99
Play with others	**88 (64)**	82 (65)	6 (55)	0.53
Have friends	**52 (38)**	49 (39)	3 (27)	>0.99
Communication skills				
Be verbal	**75 (54)**	71 (56)	4 (36)	0.50
Understand language	**66 (48)**	62 (49)	4 (36)	0.75
Follow one-step directions	**97 (70)**	88 (69)	9 (82)	0.73
Communicate with written words	**15 (11)**	15 (12)	0 (0)	0.36
Use sign language	**4 (3)**	3 (2)	1 (9)	0.30
Self-care skills				
Dress oneself	**114 (83)**	105 (83)	9 (82)	>0.99
Use toilet oneself	**119 (86)**	110 (87)	9 (82)	0.55
Bathe oneself	**89 (64)**	83 (65)	6 (55)	0.52
Brush own teeth	**83 (60)**	78 (61)	5 (45)	0.34
Brush own hair	**82 (59)**	76 (60)	6 (55)	0.75

* Fisher's exact test overall *P*-value.

Results

Sample characteristics. A total of 138 ASD children completed an initial MTE and were eligible for inclusion during the 24-month follow-up study period. Of these 138 children, 127 (92 percent) maintained the ability to receive MTE at their two-year follow up. The male-to-female ratio was 4.75:1. Subjects were grouped according to age: four- to six-year-olds (40 percent); seven- to 12-year-olds (43 percent); and 13- to 18-year-olds (17 percent). Half of the patients identified as Caucasian, and the other half was comprised of Asian, African American, and other races. Fifty-five percent had public insurance, while 43 percent had private insurance; two percent had none. Nearly all subjects lived with their parents (95 percent).

The most common comorbid medical conditions were: sensory sensitivities (49 percent); anxiety (33 percent); sleep disorder (22 percent); gastrointestinal problems (17 percent); and seizures (seven percent). Most subjects (80 percent) received some form of behavioral or medical therapy, most frequently speech therapy (74 percent), occupational therapy (59 percent), and behavioral therapy (47 percent; Table 1).

Caregiver ratings of ASD severity were 23 percent mild, 42 percent moderate, and 19 percent severe. Half the subjects had low levels of challenging behaviors, while the other half had either moderate (41percent) or high levels (seven percent). Most subjects had some form of social skills: 89 percent had the ability to cooperate during simple activities and engage in shared activities, 66 percent were able to play with others and be involved with group activities, and 38 percent were reported to have friends. The communication skills of participants varied; 70 percent of children could follow one-step directions, and approximately half were verbal or could understand language. Very few children could communicate with written words (11 percent) or use sign language (three percent). Most participants were able to perform self-care activities. More than 80 percent could dress and use the toilet independently, and approximately 60 percent could bathe, brush their teeth, or brush their hair by themselves. No behavioral variable was significantly associated with maintaining the ability to receive an MTE during the study period (Table 2). There were no significant associations between patient characteristics and ability to maintain an MTE during the study period (Tables 1 and 2).

Ability to receive MTE during the study period. All subjects had achieved an MTE at baseline to be included in this study. Of these 138 children, 127 (92 percent) maintained the ability to receive MTE at their two-year follow up. Most children (80 percent) maintained the ability to receive an exam at every-single appointment throughout the entire 24-month study period. Most patients (66 percent) who maintained the ability to receive an exam had three to six appointments during the study period, corresponding with a four- to six-month recall interval. Twelve percent of participants failed to accept an MTE at some point during the course of the study, but 60 percent of those children regained the ability by the end of the study period. Over half of the children

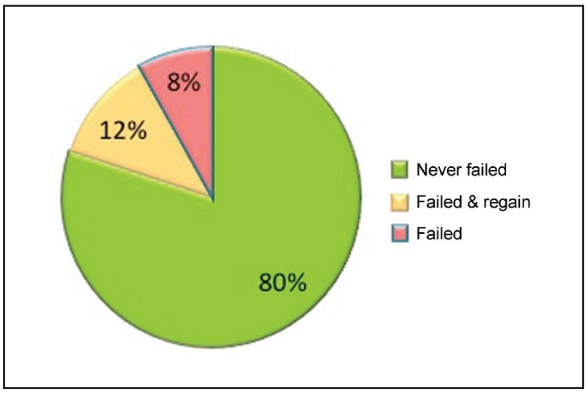

Figure 1. Minimum threshold exam (MTE) success rates. Most subjects (80 percent) never failed an examination; 12 percent of the population successfully received an exam, later failed an exam, but ultimately successfully received an exam(s) by the end of the two-year period. Only eight percent of subjects received their first MTE but were unable to successfully achieve another exam.

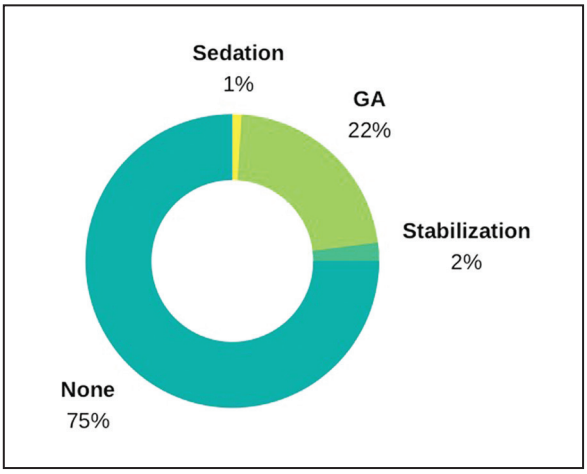

Figure 2. Advanced behavior guidance techniques (ABGTs) used during study period. One quarter of the population required ABGTs; 22 percent of subjects utilized general anesthesia for their care. Very few used sedation (two percent) or protective stabilization (one percent).

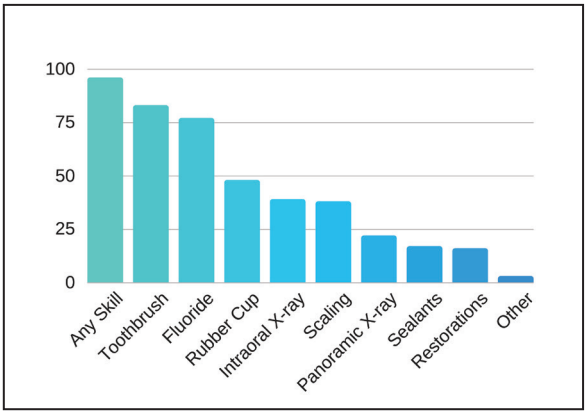

Figure 3. Additional dental procedure performed. Graphical representation of the new dental procedures (dental skills) performed by subjects, displayed as what percent of the population performed each procedure.

who failed and regained the ability to receive an MTE had in excess of eight clinic visits over the two-year period. Eight percent failed to accept an MTE during the study period and never regained the skill (Figure 1).

During the study period, one quarter of subjects required ABGTs: treatment under GA (22 percent); protective stabilization (two percent); or oral sedation (one percent; Figure 2). There was no association between a subject's ability to continue receiving exams and treatment under GA.

New dental skills acquired. In addition to maintenance of MTE, the most common new dental skill achievements were acceptance of toothbrush prophylaxis (83 percent) and permitting fluoride varnish application (77 percent). Sensory-invasive skills were acquired with lower frequency: intraoral radiographs (39 percent); hand scaling (38 percent); panoramic radiograph (22 percent); sealants (17 percent); and restorations (16 percent; Figure 3). There were no significant differences in new dental skill accomplishment between study years one and two (data not shown).

The relationship between subject characteristics (age, caregiver-rated ASD severity, number of clinic visits) and dental skills acquisition was assessed by examining a child's ability to accept fluoride application, rubber cup prophylaxis, and intraoral radiographs (Table 3). Age and ASD severity were statistically significantly associated with a child's ability to cooperate for intraoral radiographs. While 27 percent of four- to six-year-olds were able to accept intraoral radiographs, 65 percent of teenagers accomplished this skill (P<0.01). Children with caregiver-rated severe ASD were less than half as likely to achieve radiographs as their peers with mild caregiver-rated ASD (P=0.03). The total number and frequency of visits to

Table 3. ADDITIONAL DENTAL SKILLS OBTAINED DURING STUDY PERIOD AND ASSOCIATED DESCRIPTIVE CHARACTERISTICS

Descriptive characteristics	Additional skill		
	Fluoride n (%)	Rubber cup prophylaxis n (%)	Intraoral radiographs n (%)
Age (years)			
4-6	40 (73)	22 (40)	15 (27)
7-12	48 (80)	31 (52)	24 (40)
13-18	18 (78)	14 (61)	15 (65)
P-value*	0.66	0.20	<0.01
Autism spectrum disorder severity			
Mild	25 (78)	20 (63)	17 (53)
Moderate	44 (76)	25 (43)	23 (40)
Severe	17 (65)	9 (35)	5 (20)
Missing	20 (91)	13 (59)	9 (41)
P-value*	0.53	0.09	0.03
Clinical visits			
1-2	13 (48)	7 (26)	7 (26)
3-6	78 (90)	51 (59)	39 (45)
7+	15 (63)	9 (38)	8 (33)
P-value*	<0.01	<0.01	0.18

* Fisher's exact test overall *P*-value.

Table 4. ASSOCIATION OF CLINIC VISITS OVER STUDY PERIOD AND MINIMUM THRESHOLD EXAM (MTE) MAINTENANCE

Minimum threshold exam	Total number of clinic visits			Total N (%)	*P*-value*
	1-2 N (%)	3-6 N (%)	≥7 N (%)		
Never failed	26 (19)	73 (53)	11 (8)	**110 (80)**	
Failed and regained at end of study	0 (0)	7 (5)	10 (7)	**17 (12)**	
Failed and did not regain at end of study	1 (1)	7 (5)	3 (2)	**11 (8)**	
Total	**27 (20)**	**87 (63)**	**24 (17)**	**138 (100)**	**<0.01**

* Fisher's exact test overall *P*-value.

the clinic was positively associated with skill attainment. Those who were seen three to six times during the study period (correlating to a four- to six-month recall) had the greatest frequency of completing successful exams (Table 4) compared to their peers seen at different frequencies. The same four- to six-month recall participants also had the highest success with fluoride varnish application and rubber cup prophylaxis (Table 3).

Discussion

This study evaluated a sample of ASD children who received care in a university-based dental clinic. The results show that, once the MTE had been achieved, nearly all children maintained the skill over the two-year study period. This was observed in a heterogeneous population that included a wide variety of ages, comorbid conditions, and ASD severity. Despite present opinion that consistency is important for many patients with autism, the fact that this result was achieved even when all patients received treatment from multiple dentists and assistants is encouraging.

The study that preceded this one[19] reported that 87.5 percent of ASD children learned to receive an MTE through desensitization. This study adds to those findings, indicating that once the exam skill is attained it can be maintained for at least two years. No specific characteristics were identified that were associated with a patient losing the ability to accept a dental examination over the study period. This may be due to the small number of patients who were unable to maintain the MTE.

A small portion of the subjects (12 percent) failed MTE but regained the ability to receive a dental examination at some point during the study period. Of these children, over half had eight or more visits during the two-year follow-up. This may indicate a concerted effort on the part of the families and the clinic to regain learned dental skills. The results suggest that behavioral progress can be variable. Some patients may experience a "one step forward, two steps back" phenomenon. For these children, it appears that redoubling behavior modification efforts may be beneficial.

Previous research indicates that factors such as ASD severity, age, gender, and levels of challenging behaviors can be associated with patient cooperation.[19] Dangulavanich et al. found that verbal skills were associated with cooperation: 77 percent of children with no verbal skills were uncooperative, and 63 percent who used sentences were cooperative. They showed that 85 percent of those who were not toilet trained were uncooperative.[21] By contrast, in the present study there was no statistically significant association between ASD severity, challenging behaviors, age, sex, race, or any other factors and the ability to maintain an MTE. A trend suggested that patients with severe ASD may be less likely to maintain MTE; however, this finding was not statistically significant. These and other results that were not statistically significant may be partially explained by the patient inclusion criteria for the study: All subjects had already achieved an MTE. This indicates that many of the patients had a relatively high baseline level of cooperation. The authors may have also been underpowered to detect differences, given the homogeneity in a group that has already demonstrated the ability to achieve the outcome of interest.

Additional dental procedures performed. Nearly all children were able to gain additional dental skills during the study. Yet it is important to recognize that less than half received preventive services that are considered to be standard of care in pediatric dentistry (rubber cup prophylaxis and radiographs). Basic procedures such as accepting toothbrush prophylaxis and fluoride varnish were the most common accomplishments. A small-scale study that reported the abilities of ASD children to perform certain dental tasks revealed similar trends to our study; the majority of participants allowed an examination with a mirror while seated in a dental chair, placement of fluoride, and dental prophylaxis. Patients enrolled in that study had much more difficulty with operative dental procedures.[21]

The authors noted statistically significant associations between dental skills attained and age, caregiver-rated ASD severity, and number of clinic visits. Typically, developing children generally learn more dental skills as their age increases. Similarly, this study found that older ASD children were more likely than younger peers to allow intraoral radiographs. This correlates with another recent study's findings that increasing age led to higher levels of cooperation in ASD children.[21] They found that 11 to 18-year-olds were 11 times more likely to cooperate for dental examinations than their younger counterparts.[21] Children with milder ASD also received rubber cup prophylaxis and intraoral radiographs more frequently than their severely affected peers. This has important implications for planning treatment and setting parent expectations. It may not be realistic for very young children and those with severe ASD to receive intraoral radiographs.

Children receiving preventive care at routine four- to six-month intervals were more likely than those with less frequent visits to successfully receive dental examination, fluoride varnish, rubber cup prophylaxis, and intraoral radiographs. This finding is likely due to the fact that children who were able to receive standard preventive treatments were generally only seen at periodic intervals. Those who visited more frequently may have done so in an attempt to achieve those skills, while those who came less frequently may have experienced less success as a result of having fewer opportunities to practice.

The difference in dental procedures performed during study period year one and two was assessed. The authors expected to see a higher rate of procedures accomplished during year two. However, there were no major differences between the two years. A two-year period may have been too short to appreciate the long-term positive effects of a desensitization program.

ABGTs. ABGTs are frequently utilized for treatment of ASD children. Recognizing the behavioral challenges that many of these children present, parents of ASD children have a higher acceptance of ABGTs than those of typically developing peers.[7] In our population, 22 percent received treatment under GA during the study period. Others have also reported a high prevalence (37 percent) of GA for ASD children. [8] The fact that many children received services under GA is important. In our study, this was likely the result of a clinical philosophy of caring for children in a way that preserves long-term cooperation. This is reflected not only in the high rate of GA utilization but also in the small number of children who received restorative treatment in the clinic setting. This reflects findings of a recent study where use of GA for ASD children was not associated with behavior.[21] That study showed that the majority of children were cooperative for preventative procedures (63 percent) but were uncooperative for operative procedures without a local anesthetic (83 percent) or with a local anesthetic (72 percent).[21] This is similar to the present study's observation that many children tolerate exams but success with more invasive procedures is more variable.

While dental sedation for ASD children has been well documented in the literature,[22-24] few participants in this study received oral sedation (one percent). Sedation of ASD patients can be highly unpredictable for both medication and behavior response.[25] The availability and predictability of GA at the study location likely influenced providers to provide invasive procedures in that manner. There was also limited use of protective stabilization. This was because, like other desensitization studies,[9,14,17,19] the goal of the program was to build upon positive dental experiences.

Limitations and future research. This study was limited by its retrospective observational design. Randomized controlled trials and studies with comparison groups are needed to provide more accurate and detailed information about the characteristics and abilities of ASD children. All patients in this study lived at home, and over half had public insurance. These characteristics may limit the generalizability of the study. Description of patient characteristics relied upon an initial caregiver survey and is limited by the accuracy of their responses.

Conclusions

Based on the study's results, the following conclusions can be made:

1. Most children with autism spectrum disorder who learn to receive an oral examination will maintain that ability over time.
2. Twenty five percent of ASD children in the desensitization program required advanced behavior guidance techniques during the two-year study: 22 percent general anesthesia; two percent protective stabilization; and one percent oral sedation.
3. ASD children acquire new dental skills at a variable rate. Therefore, when treating ASD patients, even though new skills can be gained through desensitization, it is important to consider that some will require advanced behavior guidance techniques. Clinics providing care for children and adults with special health care needs should be prepared for this, and public health resources should be allocated accordingly.

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