Predicting successful dental examinations for children with autism spectrum disorder in the context of a dental desensitization program

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Autism spectrum disorder (ASD) is 1 of the most common developmental disorders diagnosed worldwide. According to the Centers for Disease Control and Prevention, ASD occurs in 1 of 68 children but is not related to ethnicity, nationality, or socioeconomic status. It is approximately 5 times more common in boys than girls.[1]

BARRIERS TO DENTAL CARE

Although a high percentage of children with ASD have visited a dentist (97%), many do not receive the level of care necessary to maintain good oral health.[2] The prevalence of unmet dental need in children with ASD is 12% to 15% compared with approximately 5% of typically developing children.[2-5]

Xtra Supplemental material is available online.

By definition, children with ASD have impairment in communication and sensory modulation. Therefore, basic behavior guidance techniques (BGTs) such as tell-show-do, positive reinforcement, distraction, and voice control that are effective with typically developing children may not be as effective with this population.[6-8] Circumstances that overwhelm the child's senses can

ABSTRACT

Background. The authors evaluated the effectiveness of a dental desensitization program for children with autism spectrum disorder (ASD) and determined characteristics associated with a successful dental examination.

Methods. The authors performed a retrospective review of clinical behavioral data and previsit questionnaires for 168 children with ASD who attended a university-based dental desensitization program. Data elements included demographic, treatment, and behavioral characteristics. The primary outcome was receiving a minimal threshold examination (MTE) while seated in a dental chair.

Results. An MTE was achieved for 77.4% of all children within 1 to 2 visits and 87.5% in 5 visits or less. Several factors predicted a successful dental examination: ability to be involved in group activities (relative risk [RR], 1.18; $P = .02$), ability to communicate verbally (RR, 1.17; $P < .01$), understanding of most language (RR, 1.14; $P = .02$), moderate versus severe caregiver-rated ASD severity (RR, 1.24; $P = .04$), and ability to dress self (RR, 1.27; $P = .04$).

Conclusions. Desensitization was effective in achieving an MTE for most children. Those with characteristics consistent of a milder presentation of ASD were more likely to be successful.

Practical Implications. Desensitization can be a successful approach to providing dental care for children with ASD.

Key Words. Autistic disorder; oral health; pediatric dentistry; special-care dentistry.

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also lead to avoidance reactions that may escalate to physical aggressiveness.[2,9,10] Consequently, parents may be reluctant to seek treatment, and dentists frequently resort to advanced BGTs such as protective stabilization, procedural sedation, and general anesthesia to facilitate dental care.[7,8,11]

EDUCATIONAL AND BEHAVIORAL APPROACHES TO CARE

Contemporary dental behavior-management strategies have begun including approaches that are used in educational settings.[6,11,12] Providers using these strategies recognize that the ability to receive dental care is a life skill that may be learned over time. Treatment protocols include standard techniques such as visual preparation aids[13-15]; applied behavior analysis[6]; a developmental, individual-differences, and relationship-based approach[13]; treatment and education of children with autism and related communication handicaps[16]; individualized reinforcement[17,18]; and sensory-adapted dental environments.[19]

Another approach for providing dental care for children and adults with intellectual disabilities combines progressive desensitization with individualized reinforcement.[19-22] In this type of program, the patient is gradually exposed to aspects of the dental visit that produce anxiety and provided with positive reinforcement through individualized rewards.[23] Treatment programs that use desensitization and exposure approaches have shown promise, but researchers investigating these approaches have varied widely in design.[14,15,18,24]

PREDICTORS OF A SUCCESSFUL EXAMINATION

Variables such as older age,[7,11,20] higher cognitive functioning,[7,20,25] greater communication skills (verbal ability, reading skills),[7,20] and increased ability to perform self-care[7] have been positively associated with compliance for a dental examination in children with ASD. In contrast, a high level of challenging behaviors,[20] sensory overresponsivity,[26] comorbid medical conditions,[7] and residence in a group home have been associated with poorer acceptance of dental procedures.[27,28] To date, few researchers have described cooperation predictors for children with ASD in detail or evaluated these characteristics in the context of a dental desensitization program.

The primary purpose of our study was to evaluate the effectiveness of a dental desensitization program for children with ASD. We hypothesized that children who are young, have a comorbid medical diagnosis, have parent-rated severe autism, are nonverbal, and have limited self-care abilities would be less likely to benefit from dental desensitization than their more mildly affected peers. The specific aims of our project were to evaluate the effectiveness of a dental desensitization program for children with ASD and determine the association between a child's age, medical diagnosis, parent-rated severity, communication ability, and self-care skills and his or her ability to tolerate a minimal threshold examination (MTE).

METHODS

Study design and sample. We organized a retrospective cohort study. The sample was composed of patients who participated in a dental desensitization program for children with ASD at the Center for Pediatric Dentistry at the University of Washington in Seattle, WA, from January 2012 through January 2015. Criteria for inclusion were ASD diagnosis by a physician, aged 4-18 years, and completed a previsit questionnaire. Children in the precooperative age group (0-3 years), those with incomplete chart entries or previsit intake forms, and those with non–English-speaking caregivers who were unable to complete the intake form were excluded from the study.

We used data from a comprehensive previsit information intake form completed by the caregiver that asked about previous treatment experiences, behavior, and social and communication skills. We conducted a detailed chart abstraction of each clinical visit to quantify the child's ability to tolerate an MTE—defined as an examination with an intraoral mirror while seated in a dental chair—and the number of desensitization visits required before a child was able to tolerate an MTE. We used this as a minimal threshold for a dental examination to accurately identify the point when a standardized examination procedure was obtained. This definition of MTE stands in contrast to examination procedures that are sometimes adopted when patient cooperation is suboptimal (for example, an examination with the patient standing in the corner of a room, using a penlight while the patient is seated in a nondental chair, and using fingers or a toothbrush instead of a dental mirror). The University of Washington Institutional Review Board approved this study for human participants (Human Subjects Division #49134).

Variables. ***Predictors.*** We classified the primary independent variables of interest as treatment variables and behavioral variables. Treatment variables included history of therapy (any therapy, including speech, occupational, complementary and alternative medicine, behavioral, and physical), number of therapies received, and history of protective stabilization, sedation, or anesthesia for dental care. Behavioral variables included caregiver-rated ASD severity, level of challenging behaviors, social abilities (cooperate during simple activities, be involved in group activities, engage in shared activities, play with friends, have friends), communication skills (verbal, understand language,

ABBREVIATION KEY. **ASD:** Autism spectrum disorder. **BGT:** Behavior guidance technique. **MTE:** Minimal threshold examination.