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PROPOSED GUIDELINES FOR THE CARE OF PATIENTS WITH AUTISM ASPECT DISORDER IN DENTAL CARE

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ABSTRACT

Objective: To present the main characteristics of autism to the dental surgeon and develop guidelines, based on the literature, for the approach of autistic patients in the dental office. **Methods:** A literature review of the pubmed database was carried out, using the descriptors “autistic disorder”, “pediatric dentistry” and “behaviour”. Inclusion criteria were: Articles published in English, from 2013 to 2020, available online. Exclusion criteria: Articles published in another language, prior to the period and not related to the subject. After critical reading of the titles and abstracts, 18 articles were found. Of these, two were not available and five were unrelated to the proposed subject, with 11 articles being selected for full reading and used in the discussion of the review. **Review literature:** The dentists are increasingly likely to meet autistic patients in clinics due to the increased prevalence of cases of autism aspectro disorder, considering that often these children do not have their dental needs met. Some approach methods can be adopted in order to obtain patient cooperation, avoiding the need to provide care in a hospital environment. **Final considerations:** The proposed guidelines for the care of autistic patients can guide pediatric dentists as an aid in the most appropriate conduct in welcoming these patients in the dental office.

Keywords: Autism, Pediatric Dentist, behavior.

INTRODUCTION

Autism spectrum disorder (ASD) is considered one of the most common developmental disorders diagnosed in the world. It is characterized by a triad of deficits in social interaction, communication, and restricted and repetitive behavior patterns. It typically manifests during the first three years of life. There is no cure and no defined etiology, although genetic and environmental factors are related to possible causes. Males are five times more affected than females (NUNES ABLA, et al., 2016; NELSON T et al., 2017 ; DIAB HM et al. , 2016) .

According to the World Health Organization (WHO), one in every 160 children has ASD. These children suffer from stigmatization, discrimination and human rights violations. Also according to WHO, access to services and support is insufficient worldwide. In Brazil, ASD is diagnosed in increasing numbers and at an earlier age. People who were never diagnosed before, can now have their diagnosis before 18 months of age (MELLO AMRS et al., 2013) .

The increase in diagnosed cases, along with the awareness of families, increases the demand for treatment and education for people with autism. The vast majority of people with autism spectrum disorders have lifelong special needs. Treating them involves very intensive care, from early intervention to old age (MELLO AMRS et al., 2013) .

Dental care is the main unmet health need for children with special needs. Nationally, 10.4% of all children with special needs are unable to obtain

dental treatment each year. All the challenges faced in receiving care, in the sensory response, intellectual disability and inconsistent oral hygiene routines can contribute to aggravate the oral health difficulties faced by those with ASD (MARION IW, et al., 2016) .

The treatment of autism requires a multi- and interdisciplinary team, which, along with medical treatment, should involve pediatricians, educators, occupational therapists, dentists, physiotherapists, psychologists and family guidance (AMARAL LD et al., 2012).

Dental care for pediatric patients with ASD can present numerous challenges, as they generally do not deal well with routine social situations, even less with what is stressful and invasive, such as a dental appointment. The need for dental treatment in children affected with ASD is 12% to 15%, compared to 5% of other children. In the care of these patients, the success of the traditional management of pediatric dentistry depends on the particular communicative ability of each child. Therefore, the effectiveness of many behavior control techniques can be reduced and even eliminated. (NELSON T, et al., 2017 ; MARION IW, et al., 2016)

Autistic children generally have poor oral hygiene compared to other children. Due to changes in motor coordination, the risk of caries in these patients considerably increases. Furthermore, it is very important to take into account that, due to the increase in this population, there is a need to prepare more surgeons - dentists able to assist individuals with behavioral

disorders. (CORRÊA MSN, et al., 2013 ; MARION IW, et al. , 2016)

Many dentists feel insecure in the care of autistic patients, especially with regard to approaching this patient in the dental office. With the increasing number of diagnosed cases of ASD, the demand for trained professionals has increased. Thus, guidelines are needed that can guide these professionals in approaching patients in the dental office.

The guidelines must offer a logical, clear and viable sequence of actions, in order to allow the reduction of failures, the organization of the service and the direction of professionals working in the area. In addition, the protocol should facilitate the care of new professionals who wish to care for autistic patients. In addition to offering subsidies for teaching and research.

The objective of this study was to present the main characteristics of autism to the dental surgeon and to elaborate guidelines, based on the literature, for the approach of autistic patients in the dental office.

METHODS AND RESULTS

A literature review of the pubmed database was carried out, using the descriptors "autistic disorder", "pediatric dentistry", "behavior. The guiding question was: "How to facilitate the dental care of patients with ASD?". Inclusion criteria were: Articles published in English, in the last 10 years, available online. Exclusion criteria: Articles published in another language, prior to the period and not related to the

subject. After critical reading of the titles and abstracts, 18 articles were found. Of these, two were not available and five were unrelated to the proposed subject, with 11 articles being selected for full reading and used in the discussion of the review.

LITERATURE REVIEW

AUTISM

Autism was first described in the United States, in 1943, by the Austrian physician Leo Kanner. In Austria, in 1944, Hans Asperger, also an Austrian physician, described the symptoms of the problem in the same way as Kanner did, even without maintaining any relationship or contact (MELLO AMRS et al. , 2013) .

The term "autism" derives from the Greek "autos" which means "of oneself" and the suffix "-isms" which indicates state or action. Autism is characterized by behavioral changes, related to social life, language and motor limitations. It can have different levels of severity. The most common behaviors in these individuals include: absence or delay in speech development, objection to social interactions, changes in intellectual development, aggressiveness, self-mutilation and stereotyped behaviors, such as running in circles, repetitive hand movements, walking on tip feet, quickly activate light switches (CAMPOS CC, et al. , 2009 ; AMARAL COF et al. , 2011) .

Differential diagnosis of autism is made with Asperger's Syndrome, Rett's Syndrome, Degenerative Disorders, Comprehensive Unspecified Disorders. It is estimated that 20 out of every 10,000 live births have autism, with a higher

frequency for males. There is not even a specific definite cause for its development yet; but evidence points to a combination of environmental factors such as nutrition, psychotropic drugs, autoimmune diseases in pregnancy, and viral infection during the first month of pregnancy. Vaccines were ruled out as possible causes and concluded that neonatal events may increase risks. The syndrome can occur alone or in combination with other mental disorders (SANT'ANNA LFC et al., 2017; GANDHI RP and KLEIN U, 2014) .

There is still no test capable of diagnosing autism, so it is educational tests and behavioral observations in these patients that help in the investigation. Diagnosis is important to help with more specific treatment, even if there is no cure; therapies and interventions are essential for progress in the patient's condition. Parents or health professionals should observe characteristics of children who do not reach normal development, such as: babbling a few words and gesturing at 12 months; pronounce single words at 16 months, speak spontaneous two-word sentences at 2 years of age, lose any language or social skills at any age, difficulty playing make-believe and obtaining social interactions (CALDAS JÚNIOR AF and MACHIAVELLY JL, 2013 ; SANT'ANNA LFC et al., 2017).

ORAL HEALTH OF CHILDREN WITH AUTISM

When the family is informed about the diagnosis of childhood autism, they usually receive several orientations about the therapies needed to stimulate and improve the child's social and

cognitive development. However, guidelines with oral hygiene care are not always passed on. Faced with so many activities, taking the child to the dentist becomes one of the last concerns of the family; often just looking for the office in case of pain. (CALDAS JÚNIOR AF and MACHIAVELLY JL , 2013) .

Due to their special condition, the autistic child needs some specific care. Parents of these children, upon receiving the diagnosis of their children's autism, will also need the help of a multidisciplinary team to help provide adequate health and well-being for these children. (GANDHI and KLEIN, 2014 ; SANT'ANNA et al. , 2017).

Children with Asperger syndrome have their inflexible routine when it comes to eating. It prefers softer and sugary foods. Due to difficulty with tongue coordination, food ends up being stored in the mouth rather than being swallowed. Adding this habit to the fact that they prefer foods rich in sugar, make these patients more susceptible to caries. Other high incidence oral problems are: bruxism, trauma caused by self-inflicted injuries or by the occurrence of accidents. (MCDONALD RE, et al., 2011; ALVES FRC, 2012)

Concern about the development of periodontal disease as sequelae due to poor hygiene in patients with ASD has been supported by findings of significantly more affected periodontal status in children with autism. Regarding orthodontic problems, some studies point to a higher incidence of open bite and crowding. Other studies speak of generalized spaces, open bites and class II (GANDHI RP and KLEIN U, 2014) .

In some of the available studies, significant differences were reported in the prevalence of caries, gingivitis and the degree of oral hygiene compared to non-autistic individuals. However, the literature is contradictory when referring to caries levels in autistic patients. However, these patients usually have poor oral hygiene and high levels of biofilm. This problem can be explained by difficulties in performing oral hygiene, a consequence of changes in motor coordination and little cooperation in performing tasks. The prevention and treatment of diseases such as caries and periodontal disease are based - in the control of bacterial plaque for cleaning. This care is the most effective alternative in promoting and maintaining good oral health (CORRÊA MSN et al., 2013; DIAB HM et al., 2016).

DIFFICULTIES IN DENTAL CARE

Of great importance for dentistry is the hypersensitivity of patients with ASD, due to an overly sensitive nervous system. These patients exhibit an extreme and peculiar response to certain sounds, light, aromas, textures or touches. Autistic patients have difficulties in interaction and communication. They have very limited interests, are impulsive, restless and have repetitive behaviors. Most of the time, the first visit to the dental office happens late, making the service even more complex. During care, these patients may manifest allergies, immune system dysfunction, gastrointestinal disorders, seizures, and aggressive or self-mutilating behavior. It is important for dentists to be aware of the various medications that the patient may

be using (SANT'ANNA LFC et al., 2017; GANDHI RP and KLEIN U, 2014 ; ALVES FRC, 2012).

Patients with ASD can present, in the dental office, challenging behaviors, a consequence of frustrations in their interrupted daily routine or a lot of anxiety induced by exposure to the unknown. In many situations, the child arrives for the appointment very apprehensive and scared. She refuses to open her mouth and cries even before any procedure. This behavior can be explained by the anxiety transmitted by the parents themselves, who always create high expectations due to the difficulties encountered in daily practice in relation to the cooperation of these children (SANT'ANNA FLC et al., 2017 ; GANDHI RP and KLEIN U, 2014).

Autistic patients should be assisted by a dentist in a preventive and curative proposal, as well as other patients who have a high plaque index, a very cariogenic diet, poor oral hygiene and parafunctional habits. Outpatient dental care for these patients is hampered by an exaggerated reaction to sensory stimuli (visual, auditory and olfactory) requiring greater care with equipment noise and unpleasant tastes of substances routinely used in dentistry (CORRÊA MSN, et al., 2013).

Children with ASD have multiple medical and behavioral problems that can complicate treatment in the dental office. Most of the time, these children have low muscle tone, poor coordination, drool a lot, have hyperactive knee spasms, strabismus and 30% end up developing epilepsy (MCDONALD RE, et al., 2011).

It is important that professionals work together in the treatment of autistic children. A multidisciplinary team can be formed by several professionals (neurologist, psychiatrist, psychologist, physiotherapist, speech therapist, psychopedagogue/educator and dentist). The lack of interaction between professionals, especially between the doctor and the dentist, can result in poor oral health. Due to the various jobs that a special child demands, parents end up having difficulties in taking care of their children's oral hygiene (SANT'ANNA LFC et al., 2017).

SPECIFICITY IN THE CARE OF AN AUTISTIC CHILD

The difficulties faced by autistic individuals, due to their limitations, also affect the whole family. Thus, it is necessary to offer a more comprehensive care, extending care beyond the patients, including the entire family and caregivers. To involve children in treatment and gain parental commitment and encouragement, several tentative approaches are needed. A thorough anamnesis directs the dentist to a more effective dental consultation. The construction of the bond of trust is what makes treatments more effective and easier to be performed (SANT'ANNA LFC, et al., 2017; AMARAL COF, 2009).

Behavioral approaches to the care of autistic patients are practically the same as those used in pediatric dentistry, such as: distraction, desensitization, say-show-do, voice control, positive reinforcement, modeling

and reward. Along with this, family support is needed; the implementation of similar actions at home; the gradual, careful and non-stressful approach; eliminating noise and other sensory stimuli as much as possible. It is very important to establish a routine in the appointments, including the day and time for the appointment. These should be brief and well-planned. However, the applications of these methods are much more complicated in autistic patients, but professionals should be increasingly encouraged to use these methods (AMARAL COF, 2012; CORRÊA MSN, et al., 2013).

Important details should always be observed during dental appointments, such as: elimination of stressful sensory stimuli; clear and always objective commands and, above all, establish a routine. Moving furniture around in the office, for example, can trigger a crisis. Therefore, it is important that the patient is always attended to in the same place, by the same professional and with pre-established routines. The main emotion of these patients is fear, which is why it is important to keep the environment as calm as possible (AMARAL, COF 2012).

The actions of dental surgeons are considered invasive by autistic patients. Its increased sensitivity makes it even more difficult to care for these patients. Dental stimuli such as: product odors, lights, sounds from pens and sucker increase the aversion to treatment. These problems can be alleviated if the patient gets in contact with this environment as soon as possible (AMARAL, COF 2012).

The vast majority of patients with special needs can be treated on an outpatient basis, especially when the dental surgeon chooses the most appropriate approach for each patient, considering the use of local anesthesia and even sedation, indicating general anesthesia only as a last resort (CORRÊA MSN, et al., 2013).

Because of their tendency to adhere to routines, children with ASD may require many visits to the dentist to adjust to the dental office. They may require the use of the Papoose Board or the pediatric pedi-wrap wrap and an initial consultation with conscious sedation which, in some cases, can have a calming effect on the child (MCDONALD RE, et al., 2011).

Autistic children have an important characteristic: they process information better visually than through the auditory channels. Being considered visual learners, they deal better and more effectively with what is seen than what is heard. Studies have concluded that electronic screens, photographs can be effective in reducing anxiety before dental care (WIBISONO WL, et al., 2016).

DISCUSSION

With the increasing prevalence of ASD cases, dental surgeons are increasingly likely to receive diagnosed patients in their offices. Some autistic children have an aversion to the taste of toothpaste and the feeling caused by brushing. These problems make the removal of dental biofilm and satisfactory oral hygiene difficult. A careful and gentle introduction to the toothbrush can increase acceptance, such as alternative

use of a towel or brushes with different textures and design. The same thing can be done with toothpastes. Therefore, a family-centered approach can be important. Care requires an empathetic understanding between parents and professionals. (GANDHI RP and KLEIN U, 2014 ; DELLI K et al., 2013).

Studies show that dental care for children with special needs, including autistic children, has shown relative dissatisfaction. A significant number of these children do not have their dental needs met. The main barriers related to this problem were the cost of treatment and children's behavior. During care, children with ASD may have hypersensitivity in intraoral and perioral regions and, therefore, feel aversion to light touch or even recoil during dental examination. In these cases, physical and verbal aggression and withdrawal or an attempt to fight to interrupt the service can be expected. They are consequences of aggravated sensory processing (DELLI K et al., 2013 ; GANDHI RP and KLEIN, 2014) .

Nelson T et al. (2017) assessed the prevalence of unmet dental needs in children with ASD and examined variables related to health, behavior and conditions associated with unmet dental needs in these children. The authors concluded that autistic children need more dental care than their peers and are more likely to not have dental needs met, corroborating the study by Mansoor D. et al. (2018) , in which they assessed dental care challenges in autistic children with normal development through a structured questionnaire and compared the frequency of dental care challenges in the two groups and concluded that

children with autism experienced greater difficulty in oral hygiene in home compared to healthy children. Her parents had more difficulty brushing their teeth and needed to use physical restraint to carry out the task. Children with autism visit the dentist less than healthy children, parents reported that the cause was the child's uncooperative behavior, data showed that the autistic group had more aversion to the dentist compared to the healthy group. Also according to the study by Diab HM et al. (2013), who evaluated autistic gingival health in the city of Riyadh, capital of Saudi Arabia, and concluded that autistic children have greater gingival inflammation, poor oral hygiene and a slightly lower salivary pH when compared to the healthy control group. These children are at greater risk for developing dental disease. Based on this result, they suggested the creation of a special oral health program regarding the treatment and maintenance of good oral health in autistic patients.

Contemporary strategies for managing dental behavior began including approaches that are already common in educational contexts. Those who have used these strategies recognize that the ability to receive dental care is a vital skill that can be learned over time. In general, existing protocols include standard techniques, such as: applied behavior analysis, developmental approach, respect for individual differences based on relationship, individualized reinforcement, and adapted offices. A process known as functional behavioral assessment can take place during a prior consultation with parents. The dentist can organize the

patient's home-centered preparation with parents, familiarization with dental instruments, teaching some skills needed for care, such as the phrase "open your mouth" and develop personalized photo books to help the child in adapting to the dental environment. Emotional discomfort caused by various stimuli in the dental office can be minimized by sensory adaptations made in the clinical environment. Parents should be asked to bring the child's favorite videos or songs to the office, with the intention of contributing to a more familiar environment. Even if the procedure is in progress, professionals should concentrate and be aware of triggering points for adverse reactions. (DELLI k et al., 2013; NELSON † et al., 2017), corroborating with Marion IW, et al. (2016) who investigated the preferences of parents and caregivers of autistic children for different types of dental histories used as adaptation tools. The authors concluded that dental histories could help prepare families and children for a visit to the dental office.

Therefore, the approach to dental care for children and adults with intellectual disabilities combines progressive desensitization with individualized reinforcement. In this type of approach, the patient is gradually exposed to the dental environment, always emphasizing positive reinforcement through individualized rewards. Treatment programs that use desensitization and exposure show promise. Desensitization consists of exposing the child to the dental environment repeatedly, in order to provide confidence and adaptation. Its use can result in greater cooperation

from children with ASD. The first step in the process should be to learn from parents the kind of positive reinforcement that can be most valuable to their children. The first procedures, such as the clinical examination, will be practiced in a simulation environment, which could be the house itself, combined with positive reinforcement. Subsequently, the following sessions would be held in the office for the actual clinical examination. However, to carry out desensitization, the oral health team must be available to move to the place of simulation. For this reason, performing simulation consultations in the dental office itself before the clinical examination can be considered (GANDHI RP and KLEIN U, 2014; NELSON T *et al.*, 2017), according to the results of the study by Nelson T *et al.* (2017) in which they indicated that desensitization can be an effective method of teaching and adapting for children with autism. In the sample studied, most children tolerated a dental examination after 1 or two desensitization visits, and most children received a minio llinear exam after 5 visits. Children with milder degrees of autism were even more prone to desensitization. Greater communication skills, self-care, and social skills were associated with greater likelihood of receiving a dental exam. Likewise, children classified as moderately severe were more likely to undergo exams than those classified as severe, as well as visual aids are important tools in communication with autistic children. Studies show that images and photographs are a concrete method of visual support for most of these children. Electronic media can serve as

an efficient distraction to reduce anxiety in the dental office. A widely used approach has been visual pedagogy. It harnesses the ability of autistic children to respond better to images than to words. It may involve the use of books, photographs and colours, stories or models represented in videos, which can be combined with positive reinforcement. This technique is similar to the technique that incorporates photographic sequences of a desired behavior. It has been used to improve behavior in the office and in oral hygiene routines at home. Visual pedagogy combined with other basic behavioral techniques has been successful in improving the cooperation of autistic patients in dental examinations (MARION IW, *et al.*, 2016; GANDHI RP and KLEIN U, 2014; WIBISONO WL, *et al.*, 2016; DELLI K, *et al.*, 2013), in agreement with the study by Wibisono WL, *et al.* (2016), who concluded that images of other patients in the office, instruments and equipment can be used as useful communication tools for children with autism. Based on the results, the images related to the dental visit were generally easy to understand. The results suggested that all activities of a dental clinic will be better accepted by autistic children if presented in an understandable image format before having the actual experience.

The Social History™ is an intervention tool used for autistic children. They usually consist of a brief sequence of images and sentences describing a particular situation. Often used to generate desired behavior or eliminate some existing undesirable behavior or prepare a child for a new

experience. They are relatively inexpensive, simple to use and can generate a positive result. Tablets and computers have been implemented with varying degrees of success (MARION IW, et al. , 2016 ; DELLI K, et al., 2013).

Patients with autism may need active or passive protection in cases of urgent treatment, as part of a sedation process or because they have uncontrolled movements that put their own safety, the team and the family at risk. Protective stabilization may actually be effective in calming the autistic child due to the profound pressure produced by its placement. However, care must be taken to prevent injuries in these patients. Sheaths must be placed in such a way as not to hinder the patient's breathing or cause overheating. Studies show that planned stabilizations offer less risk and parents should always obtain positive explanations from the dentist, in addition to signing the consent form (GANDHI RP and KLEIN U, 2014) .

Sedation is an option that can be considered for these patients when other options fail. Benzodiazepines, in particular diazepam and midazolam, are the most suggested in combination with the administration of nitrous oxide. Comorbidities that contraindicate the use of sedation should be excluded, as well as medications that may interact or compromise the success of the procedure (GANDHI RP and KLEIN U, 2014) .

General anesthesia is often indicated for dental care in autistic patients due to factors such as high caries activity, extensive treatments and little or no cooperation for treatment. This option should be considered when other

alternatives are not successful or when the patient has other planned medical services that can be associated with dental treatment. Despite being considered safe, some adverse events are reported in autistic patients, such as disturbing behaviors and postoperative vomiting that delays the patient's release. Other less frequent events include extensive post-operative bleeding and seizures that require longer hospital stays. Parents generally prefer more basic care, or at least milder attempts, before submitting their children to more invasive techniques, such as general anesthesia. Furthermore, treatment under general anesthesia is expensive and poses many medical risks for children. (MARION IW, et al. , 2016; GANDHI RP and KLEIN U, 2014). However, in the study by Önoğlu S et al. (2017) reported that because of the health of these children and behavioral problems, the vast majority of parents stated during the study that they preferred dental treatment performed under general anesthesia rather than special education methods. Also being in agreement with Corridore D, et. al (2020), who in a systematic review investigated the prevalence of dental caries and periodontal disease in children with ASD and the need for the use of general anesthesia in the treatments, it was possible to observe that where the treatment was carried out there was a high prevalence in the use of general anesthesia, and the negative behavior often reported for these patients evidenced the lack of specifically designed protocols that could improve their collaboration and, later, their oral health and, therefore, additional

strategies for preventive care should be applied to these patients.

Based on the literature, the proposal for guidelines for approaching autistic patients in dental care follows.

GUIDELINES

1 Previous consultation with the Parents and Anamnesis:

At this appointment, the dental surgeon should seek important information about patients from their parents. Investigate the medical history, tastes and preferences, check which positive reinforcement can be more accepted by your child, as well as prepare the parents for care. It is a great option for advance knowledge about the patient.

2 Desensitization consultation :

2.1 Simulations:

These consultations consist of a simulation performed in a place other than the dental office. Preferably in the patient's own home. In this simulation, a previous desensitization would be carried out with photos and even dental instruments, added to positive reinforcement and training in some commands ("open your mouth", "spit"). However, this approach may depend on the availability of the dental team.

2.2 Desensitization:

Desensitization initiated in the simulation environment should be continued in the office, gradually and individually, repeated several times until the patient gains confidence and feels secure. It is always important to take into account information obtained from parents, such as positive reinforcement that can be more accepted. If the simulation is not

possible, desensitization can be started in the dental office itself.

3 Scheduled appointment and always at the same times and same companions;

4 Elimination of noise and other sensory stimuli;

5 Always use the same sequence of procedures;

6 Talk - show - do technique in association with the modeling technique and others that will be reported later.

7 Visual supports:

Visual media are an effective way to entertain patients. Videos and photographs can be used during the consultation, both in desensitization and to reduce anxiety.

7.1 Visual Pedagogy:

You can use books, photographs, stories or models represented in videos. All of this can be combined with positive reinforcement.

7.2 Social History™ :

A brief sequence of images and sentences describing a specific situation that you want to obtain from the patient. Technologies such as tablets and cell phones can also be used.

8 Protective stabilization:

It should be used when previous approaches are not sufficient or in cases of urgent care. Stabilization protects and can even calm the patient.

9 Sedation:

Sedation can be a suggestion when all approaches to behavior control fail.

10 General anesthesia:

It is indicated for patients with very difficult behavior or in emergency cases where the patient needs extensive treatment .

FINAL CONSIDERATIONS

Due to the variety of techniques available to prepare an autistic patient's dental visit, professionals face the challenge of determining the best care and treatment plan for the care of these patients. Pediatric dentists can and should treat these patients, seeking to know the individuality and the most satisfactory way of approaching each individual in particular, without causing physical and psychological damage to the patient and family. The existence of guidelines that logically and sequentially address the different approaches in the literature for the dental care of autistic patients is of great importance.

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