

The influence of playful clothing during dental care with autistic children (ASD)

A influência da indumentária lúdica durante os atendimentos odontológicos com crianças autistas (TEA)

La influencia de la ropa lúdica durante el cuidado dental de niños autistas (TEA)

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Abstract

Objective: The objective of this article was to address children with ASD and the impact that clothing used by dentists can have. **Methodology:** Searches were carried out through data available on PUBMED Central and BVS/BIREME, with research carried out on the Scielo platforms, CAPES Newspaper Portal, Web of Science, The Cochrane Library, Science Direct, Newspapers, Chinese Literature and the Google Scholar platform. We obtained 44 articles addressing various information such as: the impact of recreational clothing on the interaction of children with TEA with dentistry. This literature review article was created from readings of Mattos's (2015) study. **Results:** From this study, it is confirmed that children with TEA tend to be hypersensitive to colors and luminosities, requiring most of the time dental treatment, using playful clothing, an essential tool to develop receptivity during consultations, in addition to creating a better patient x professional relationship.

Keywords: White coat syndrome; Autism Spectrum Disorder; Fear; Anxiety about dental treatment.

Resumo

Objetivo: O objetivo deste artigo foi abordar sobre a criança com TEA e o impacto que a indumentária utilizada pelo dentista pode ter. **Metodologia:** Foram realizadas buscas através de dados disponíveis no PUBMED Central e BVS/BIREME, com pesquisas realizadas nas plataformas Scielo, Portal de Periódicos CAPES, Web of Science, The Cochrane Library, Science Direct, Periódicos, Literatura cinza e na plataforma Google Scholar. Obtivemos 44 artigos abordando diversas informações como por exemplo: o impacto das roupas lúdicas na interação de crianças com TEA com a odontologia. Este artigo de revisão de literatura foi feito a partir de leituras do estudo de Mattos (2015). **Resultados:** A partir deste estudo, constatou-se que crianças com TEA tendem a ser hipersensíveis às cores e luminosidades, rejeitando na maioria das vezes o tratamento odontológico, sendo a indumentária lúdica, uma ferramenta essencial para desenvolver a receptividade durante as consultas, além de criar uma melhor relação paciente x profissional.

Palavras-chave: Síndrome do jaleco branco; Transtorno do Espectro Autista; Medo; Ansiedade ao tratamento odontológico.

Resumen

Objetivo: El objetivo de este artículo fue abordar a los niños con TEA y el impacto que puede tener la ropa utilizada por los dentistas. Metodología: Las búsquedas se realizaron a través de datos disponibles en PUBMED Central y BVS/BIREME, con investigaciones realizadas en las plataformas Scielo, Portal de Periódicos CAPES, Web of Science, Biblioteca Cochrane, Science Direct, Periódicos, Literatura China y la plataforma Google Scholar. Obtuvimos 44 artículos que abordan información diversa como: el impacto de la ropa recreativa en la interacción de los niños con TEA con la odontología. Este artículo de revisión de la literatura fue creado a partir de lecturas del estudio de Mattos (2015). Resultados: A partir de este estudio se confirma que los niños con TEA tienden a ser hipersensibles a los núcleos y luminosidades, requiriendo la mayor parte del tiempo tratamiento odontológico, uso de ropa lúdica, herramienta esencial para desarrollar la receptividad durante las consultas, además de crear un mejor paciente. x relación profesional.

Palabras clave: Síndrome de la bata blanca; Desorden del Espectro Autista; Miedo; Ansiedad por el tratamiento dental.

1. Introduction

The word autism originated from the Greek “autos” and highlights the behavior of turning inward (Amaral et al., 2012), which is a behavioral disorder that affects people of both genders and different age groups (Albuquerque et al., 2009; Zanon et al., 2014). Individuals on the autism spectrum have impairments in their behavioral areas and relationships with other people, which makes the dental office unpleasant, as it is not something that is part of these children's daily routine (Coimbra et al., 2020; Stelzer, 2010). The dental office triggers some critical points that can negatively provoke the various sensory abnormalities that can make up a child with ASD, such as: the noises caused by rotating and suction instruments, the strong light emitted by dental equipment and the own office, in addition to the direct contact exercised by the dentist and the child during the procedures, which can become a potentially traumatic moment (Pagano et al., 2022), which can trigger other problems such as "white coat" syndrome (Eigbobo & Etim, 2019; Hermida et al., 2017; Asokan et al., 2016).

Because of the various changes in sensitivity that affect children with autism, they have a strong difficulty with clothing. Researchers state that acceptance of clothing must be introduced day after day in the lives of these individuals, with persistence on the part of parents, so that this can be worked on in the child's life to become something "normal" for them. Thus, it is seen that there is a need to improve the relationship between young autistic people and dental clothing, modifying the composition or appearance of the clothing such as: color, modeling, fabrics, smell, among other aspects that will generate sensory relief for the children (Werner, 2020).

Thus, through studies, it was seen that for the professional to be able to carry out a quality clinical examination, it is necessary to use play in dentistry, especially when it comes to monitoring autistic children, so that there is a development of a good relational quality between the dental surgeon and the autistic patient. Therefore, it is seen that a playful coat used by the pediatric dentist can improve his relationship with the patient who has autism, based on the attractive and friendly visual stimulus that is one of the methods of psychological management, thus creating a positive characteristic that will have an effect on the choice of those responsible for professionals who use these clothes, reaching the conclusion that playful dental clothing will play a large and important role in creating trust between the dentist and the child, facilitating dental care (Costa et al 2014; Rank et al., 2019).

The objective of this article is to show how playful clothing during dental care can positively influence the relationship between the autistic child and acceptance of the treatment carried out by the dentist, consequently improving the relationship between the child and the pediatric dentist during dental care.

2. Methodology

This narrative literature review article was made from readings of the study by Mattos (2015) which talks about how a literature review should be carried out, its approach, structure and what are the differences between other types of review articles, along with other online searches. Through data available in PUBMED Central and VHL/BIREME. The searches were carried out on other platforms, such as: Scielo, CAPES Journal Portal, Web of Science, The Cochrane Library, Science Direct, Periodicals, Gray Literature and the Google Scholar platform. Research was carried out on the DeCs platform, using the following descriptors: White Coat Syndrome; Autism Spectrum Disorder; Fear; Anxiety about dental treatment.

3. Results

3.1 Autism spectrum disorder

Several researchers and scholars have been carrying out studies on autism for decades, so that today, it could be stated that autism is triggered by fundamental genetic changes in the human genotype. Studies have come to the conclusion that the disorder has its origins linked not to just a single gene, but rather, it is connected to a series of groups of genes and the interaction that occurs between them (Silva, 2010). The individual with ASD has motor difficulties, such as carrying out activities that make up their daily lives without the help of others, without having autonomy, and becoming even more dependent, if they have a greater degree of severity, generating difficulties and obstacles for both the patient as their guardians. Several essential and routine activities are compromised because of this disorder, such as dressing, bathing, eating, practicing physical activities alone and especially cleaning the oral structure, made difficult by this behavioral absence in an autonomic manner (Gonçalves et al., 2016).

In addition to compromised autonomy, most autistic people have hyperactive characteristics, have reduced attention span, trigger impulsive reactions in their decisions, more aggressive responses to their daily activities in addition to aggressive behavior towards themselves, which can cause them to attack themselves. Therefore, these difficulties generate, as a result, sensitivity attributed to light and specific colors, triggering an excess of fear as a response to various non-harmful objects and means, in addition to hypersensitivity to sounds, which is a characteristic present in individuals with ASD, especially if it deals with autistic children, who have this trait stronger, making this set of difficulties the biggest factors that cause difficulties in dental treatments and care, when it comes to being carried out on patients with this disorder (Coimbra et al., 2020).

Coming to the conclusion that the clinical picture of people with autistic disorder has a defined definition nowadays, which is: ASD is a disorder that generates a certain set of difficulties and symptoms that manifest themselves in a way that compromises the formation and structuring of social relationships, having repetitive behaviors, triggering a certain persistence in several non-functional routine activities in addition to the difficulties in expressing themselves and speaking attributed to them (Stelzer, 2010; Maran & Bharath, 2016).

3.2 Children with ASD

ASD is a disorder that can affect several individuals, including children, who can be diagnosed based on criteria, which state that the first manifestations of ASD appear before 36 months of age (American Psychiatric Association, 2013), however, other data acquired from several studies, demonstrate that the majority of children with autism spectrum disorder present developmental problems that can be seen and analyzed, between 12 and 24 months of life of the young human being (Noterdaeme & Hutzelmeyer-Nickels, 2010; Chakrabarti, 2009; Chawarska et al., 2007), and may even in certain cases, some types of qualitative deviations in the child's development can be seen before they even reach 12 months (Maestro et al., 2002; Zwaigenbaum et al., 2005).

An individual with ASD routinely has difficulties with hypersensitivity issues, which usually manifest themselves through distorted vision with bright objects and lights, very compromised focusing on small details, in addition to enormous fragmentation of images (Dawson & Watling, 2000). Although there are many controversies in studies carried out based on the results of brain imaging exams of children with autism spectrum disorder, hypersensitivity is a condition that becomes very noticeable after birth, thus allowing a study on the child with the aim of discovering the presence or absence of the disease in the individual (Moraes, 2004; McConkey et al., 2009).

Many researchers and scholars claim that autism is a type of Pervasive Developmental Disorder, due to the signs and failures of social integration seen daily in the face of responses and postures in situations throughout the child's life (Carvalho et al., 2015). It is estimated that, nowadays, the worldwide prevalence of autism spectrum disorder is around 70 cases for every 10,000 inhabitants, with boys having a greater number of cases, reaching four times more prevalence (Volkmar & McPartland, 2014).

3.3 Difficulties and limitations during dental care for children with ASD

Children with autism spectrum disorder do not have distinct or impaired anatomical oral characteristics when compared to those who do not have this disorder, however, the use of controlled medications to treat this condition together with the difficulties in performing hygiene of the entire oral structure alter the oral health of children with ASD, making them more susceptible to diseases and problems throughout their oral cavity, problems such as cavities, calculus and periodontal diseases. Therefore, these patients need greater attention, differentiated treatment, oral health education carried out by the dentist and especially monitoring to carry out procedures that act to prevent problems in their oral microbiota and its structures, requiring periodic visits to the dentist (Marulanda et al., 2013).

Children with ASD, in most cases, have several bad habits and habits in relation to the mouth, such as: biting or sucking on objects, constantly biting clothes, placing fingers in the mouth, mouth breathing, and onychophagia (biting nails). Thus, it is seen that, because of these disorders generated by manias attributed to these children, it is necessary to carry out radiological imaging exams on a regular basis, aiming to monitor the development of the bone and dental structure of children with this disorder, in order to carry out effective treatments and as quickly as possible (Santana et al., 2020).

Children with autism are usually patients who do not get used to treatments carried out by the dentist, as they do not feel comfortable in a dental office, meaning that the dentist has an important role in welcoming and receiving children with ASD. in your work environment (Marulanda et al., 2013). One of the most common factors that cause this is the fact that the professional must wear mandatory clothing, including the use of: coat, gloves, mask, hat and glasses, which are accessories that are not part of the daily routine. of children with ASD, therefore, many children generally feel in a situation of danger when they come into contact with the dental office and the dentist (Rank et al., 2019). Therefore, the playful coat is an effective and essential item, as it is an item that will contribute to the child's adaptation process, helping to create this bond with them, facilitating during the procedures and approach, thus having the printed or printed coats colorful, tools that can develop in the child a feeling of welcome and friendliness, generating in the child an increase in trust with the dentist (Chung et al. 2012).

3.4 Professional relationship x patient with ASD

The pediatric dentist's role and duty is to use specific techniques and methods of treatment, which can facilitate the child's relaxation and receptivity to the professional's environment, with the objective of developing and gaining the confidence of children with autism spectrum, who in Most of the time it requires time and dedication from the dentist and this is generally not possible to obtain during the child's first dental appointment. From this, the first moment of contact between these young

people and the dentist must occur in a way that aims to establish a relationship with them, starting from a conversation with the child, welcoming them and seeking to know as much information as possible about the patient, so that these data be used to facilitate the creation of a connection between the dentist and the child with ASD (AutismSpeaks Inc, 2016).

Aiming to acquire greater trust on the part of children and more quickly, several researches and studies have come to the conclusion that the image that the patient has about the pediatric dentist will have a large and significant influence on their reaction and receptivity to treatment. dentistry, especially when it comes to patients such as children (Costa et al., 2014).

One way that is highly effective is to enjoy fun in dental clothing, with this as a key factor that can trigger a better relationship between the patient and the professional, as it is a visual stimulus that is more attractive, being a way that relates to one of the types of management and psychological methods. Stating thus, that there is a great relationship between the choice of patients and the clothing used by professionals, making playful clothing play an important and effective role in establishing a good relationship of trust between the patient and the professional, which it can be positive if used correctly or negative depending on the type of clothing and whether it is being used correctly (Pagano et al., 2022).

3.5 White coat syndrome

Based on research and various studies, Isaac Newton carried out an experiment on his disk, which resulted in the observation of white light, which, when decomposed in the prism, generated a breakdown in all colors in general. In this way, the conclusion was reached that the colors need to be erased so that the color white appears, in a pure way, without triggering a form of interference or alternative stimulus, which proves the association of the color white with the feeling of fear or pain on the part of children on the autism spectrum, due to the absence of color or stimuli (Cunha et al., 2021; Alves et al., 2007).

Therefore, the white color in dental clothing is a factor that promotes aversion on the part of people with ASD, which can serve as a trigger for a child on this spectrum to develop "white coat" syndrome, named after studies carried out by several researchers (Chawarska et al., 2007; Zwaigenbaum et al., 2005; Marulanda et al., 2013). This obstacle affects people of different age groups, who do not have heart problems, but this syndrome triggers a spike in blood pressure elevation, seen during exams and dental clinical procedures, which can make it difficult to carry out a consultation. The expectation or tension before dental care changes the behavior of these patients, which will be analyzed by dental surgeons (Sociedade Brasileira de Cardiologia, 2007).

Aiming to reduce the repulsion towards dentists that children on the autistic spectrum tend to feel, researchers have cited the need and notoriety of welcoming this type of patient through clothing that has colors that are more pleasant to their eyes (Dhiaba, 2020), since they are highly sensitive in color. Bright and strong tones are extremely stimulating and disturbing, like the white color on the dentist's clothes, which is one of the most common factors that can prevent a good relationship between the pediatric dentist and the child with ASD (Cunha et al., 2021).

3.6 Visual impact of color on patients with ASD

Patients with ASD have a hypersensitivity to colors and luminosity, colors in general have no material existence, they are just visual sensations caused by the action of light on the organ of vision. Therefore, for the color to appear, it is necessary for the existence of light, which is a physical object, and the eye, a receiving device (Pietra, 2017). Furthermore, it is believed that each color has a different action on the body's systems and organs, and the correct color can be applied in order to harmonize the human organism. This harmonization is made through the appropriate use of colors, which can help create therapeutic environments and stimulate the flow of potential healing energy in humans (Silva, 2000).

Through studies, the great importance related to colors in autistic people was seen. It is known that perception occurs differently, color can cause a sensorial-visual overload, that is, it can be an object of obsession and relief (Pietra, 2017). It is estimated that around 40 to 90% of children on the autism spectrum develop some type of Sensory Integration Dysfunction, stabilizing themselves mentally through visual connections (Mendes & Costa, 2017). From studies carried out by researchers (Trotta, 2008), it was seen that therapeutic management of the vision of an individual with ASD can cause interference in brain functions, confirming the thesis that the effects of colored light stimulation on certain points of vision can trigger the reprocessing of associated affects and psychic representations. Thus, it was seen through studies that some types of colors determined from the visible spectrum can activate or block processes within the physiological, biochemical and biological areas of the human brain, in addition to the synthesis of several neurohormones (Radeljak et al., 2008).

Various colors trigger responses in autistic children, among them we have for example: the color blue stimulates a feeling of greater balance and calm for children. Furthermore, blue also contributes in situations where the child presents sensory overload (when the patient with ASD is excessively stimulated in their senses, which often happens in dental offices), being associated with safety and ease in child collaboration (Ellore et al., 2015; Asokan et al., 2016). The orange and yellowish tones are responsible for stimulating the child's socialization, as they act to increase the good mood, happiness and creativity of autistic children. This fact occurs mainly because the color orange is expansive and breaks the monotony, enabling an improvement in interpersonal relationships (Pietra, 2017), whereas the color green has a refreshing and calming characteristic, both mentally and physically in autistic children, relieving pressure blood flow, dilating the capillaries, relieving tension in addition to triggering a stimulus to stabilize emotions in the pituitary gland (Walker, 1995).

The use of some colors can also make it difficult to have a good relationship with autistic patients, for example, studies have shown that the color black absorbs energy and vitality, causing mental and physical fatigue and a negative aspect, the color brown and red are associated with sad scenarios of anger, decreasing the child's vitality, indicating decadence, which harms the relationship between the dentist and children with autism (Asokan, 2016; Umamaheshwari, 2013; Walker, 1995; Soares et al., 2023).

4. Discussion

The data analyzed in this literature review revealed that Autism Spectrum Disorder (ASD) is a complex and multifaceted condition resulting from extensive genetic changes and interactions between multiple genes, as well as genetic polymorphisms present in some chromosomes (Silva et al., 2010). The autistic spectrum encompasses characteristics involving hyperfocus, which lead to specific abilities considered extremely functional or even genius-level. This intense brain demand results in deficiencies or dysfunctions in other brain areas, causing a paradoxical limitation in the simpler and necessary areas for group life: socialization. Thus, the patient who faces the dental chair is unique and many times lives in transition between geniality and triviality.

Individuals with ASD may exhibit dysfunctions in motor and behavioral interactions, which compromise the performance of daily activities autonomously. Depending on the spectral gradient, simple activities like cutting a piece of bread can be risky, generally requiring increased domestic care and various behavioral therapies, including the involvement of psychiatrists or neurologists (Gonçalves et al., 2016). Additionally, children and adolescents with ASD frequently manifest sensory hypersensitivity, which can significantly hinder or even prevent dental care (Coimbra et al., 2020). The relationship between the pediatric dentist and the patient with ASD is critical for successful treatment, and techniques like the use of playful clothing can enhance this interaction (Chung et al., 2012). Therefore, contact with the right professional for each type of patient is a fundamental condition for the proper conduct of treatment, which may involve not just one professional but a more integrated

and multidisciplinary dental team, especially for surgical procedures that involve the use of local anesthetics or conscious sedation.

The findings of this review corroborate previous studies pointing to the genetic complexity of ASD (Silva et al., 2010) and the prevalence of motor and behavioral difficulties in individuals with this disorder (Gonçalves et al., 2016). Sensory hypersensitivity, widely documented in the literature, is also confirmed here as a significant challenge for dental treatment (Dawson & Watling, 2000; Coimbra et al., 2020). The prevalence of ASD, especially in boys, as well as developmental difficulties observed at early ages, is consistent with previous epidemiological data (Volkmar & McPartland, 2014). Thus, conditioning in pediatric dentistry from the early years is a fundamental condition from the first approach until the child accepts going to the dentist as a condition dissociated from fear or tension, with the surgeon-dentist's attire being one of the main details.

The results of this review have several practical and theoretical facets. Firstly, they highlight the need for a multidisciplinary approach to the care of individuals with ASD, involving not only medical and psychological intervention but also specialized dental management. The use of playful clothing by dentists can be an effective strategy to reduce anxiety and improve cooperation during dental treatment, a particularly relevant fact given the "white coat syndrome" observed in many patients with ASD (Cunha et al., 2021). Most of these children have a disastrous history of medical and dental care, especially those from poorer backgrounds who generally lack financial resources for proper conditioning and support from more specialized and prepared professionals to perform prevention through regular visits to the dentist, which is fundamental to prevent oral diseases in children within the spectrum (Marulanda et al., 2013).

Since the past decade, there has been growing interest in the use of technological interventions to improve the dental care of children with ASD. The reason for this is the increasing number of patients falling into this condition. The reason for this increase is not entirely clear: on one hand, early diagnosis has more precisely detected the nuances of the ASD spectrum, and on the other hand, various theories suggest that lifestyle, as well as the implementation of certain vaccines, may be contributing factors. Much remains to be investigated, including theories involving industrialized foods in the constitution of the gut flora that could potentially modulate the behavior of autistic patients.

Tools such as virtual reality (VR) and augmented reality (AR) applications have shown potential to reduce anxiety and improve cooperation during dental visits. Such technologies can simulate dental environments in a playful and interactive manner, allowing children to familiarize themselves with procedures before facing them in real life. Outdoor waiting rooms, as well as a smooth organoleptic transition during the few meters that separate the external environment from the dentist's chair, are clearly good indicators of preventive treatment without many behavioral incidents. Not only the attire of the professional but also yellow lighting, soothing music, and the quietest possible office environment will certainly make a difference in the practical care of these patients.

Moreover, the use of augmentative and alternative communication (AAC) devices can facilitate interaction between the dentist and the child with ASD, allowing for more effective communication about fears, discomforts, and preferences. The incorporation of training programs for parents and caregivers is also essential. Teaching strategies to manage anxiety and prepare children for dental visits can significantly improve the treatment experience. One of the main strengths of this review is the comprehensiveness of the included studies, covering various aspects of ASD and its impact on dental care. However, a significant limitation is the heterogeneity of research methods and diagnostic criteria used in the analyzed studies, which may hinder the generalization of results, as each autistic patient requires a unique perspective focused on their needs and spectral characteristics, including anxiety-related stereotypes. Furthermore, many studies rely on small and specific samples, limiting the applicability of findings to broader populations.

In conclusion, future research should focus on longitudinal studies with larger and more diverse samples to validate current findings and explore new strategies for dental management of children with ASD. Additionally, investigating the impact of different therapeutic approaches, such as behavioral and technological interventions, could provide valuable insights to improve the quality of dental care. Research examining the effectiveness of specific oral health education programs for caregivers and health professionals is also recommended, so that preventive interventions can be routinely carried out for each patient, within their homes as well as in the school environment.

5. Conclusion

This review highlights the complexity of ASD and its significant impacts on the daily life and dental care of affected individuals. Innovative strategies, such as the use of playful clothing by dentists and a multidisciplinary approach, are essential to improving the experience and outcomes of dental treatment for children with ASD. The incorporation of technological interventions and additional support programs can also play a crucial role in effective care. Continuous education and research are fundamental to developing and implementing practices that better meet the needs of this highly necessitous population, which still has few care options in both public and private healthcare systems.

From this narrative literature review, it is seen that children with autism are sensitive to light and colors, which makes them not feel comfortable inside a dental office, and that the clothing used by the dentist can trigger this visual impact too. Therefore, it is necessary that more research be carried out with the aim of developing equipment, clothing and dental techniques that do not cause this hypersensitivity during care, so that a more receptive environment is created in which the child allows themselves to be treated by the dental surgeon.

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