



(RESEARCH ARTICLE)



## Oral health findings and evaluation among autistic children in Saudi Arabia

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### Abstract

Autism spectrum disorder (ASD) is a developmental disability caused by differences in the brain. People with ASD often have challenges with socializing interacting with people around them, their behaviors and interests are restricted and repetitive. Children with ASD might face some difficulties in the way they learn or interact, which might interfere with their general health and especially their oral health, since they might need the dexterity and will of obtaining a good oral health.

We've conducted a study on some of the children with ASD in Saudi Arabia to screen their general oral health using the dmft system by the WHO.

The aim of this study is to analyze the oral health status of the ASD children in Saudi Arabia and to sense whether we need a room for improvement in their oral health awareness and knowledge.

**Keywords:** Autism; Dentistry; Oral Health; Children; ASD; Saudi Arabia

### 1. Introduction

Autism is defined as an alteration in neurodevelopment characterized by severe damage in social interaction, language, behavior and cognitive function <sup>(1)</sup>. The patterns of the illness is distinct and are unified in a classification system usually referred to as Autism Spectrum Disorders (ASD). A study was published by Rice et al in 2004 reported that every 1 in 150 births are diagnosed with ASD <sup>(2)</sup>. Another recent study, provided by the Centers for Disease Control and Prevention in Atlanta, USA, studied children under 8 years old and reported that 1 in 110 children suffer some form of ASD, with a male-female ratio of [3.7:1.0] respectably <sup>(3)</sup>.

Although some studies were conducted on autism patients, they were limited with some significant factors such as the limited budget or most of the sample size being uncooperative as well as they weren't given any oral health instructions after the examination to improve the overall level of oral health <sup>(4,5,6)</sup>

### 2. Literature review

The barriers to dental care for autistic patients and their families are well recognized and include issues around social communication difficulties, behavioral difficulties and sensory sensitivities <sup>(9)</sup>. Especially if they were children with ASD, and the importance of dental care should be known to all parents and their siblings, either with regular dental visits or through oral health education.

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Some studies showed that patients with ASD tend to have a high risk of caries and low oral health in general. It can be expected that caries risk is higher in these patients due to difficulties in regular tooth brushing and flossing as well as it could be caused by the lack of dexterity skills of ASD children, resulting in low level oral hygiene <sup>(10)</sup>.

Since there is a way to prevent most oral diseases and to elevate the awareness of children’s oral health, though special pathways, it is important to establish the real connection between oral health issues and ASD, in order to have a clear blueprint of a preventive and therapeutic plan of improving the quality of life of these patients.

### 3. Material and Methods

A group of children (102) aged under 14 years old, will be screened for their oral health status, as well as a PowerPoint presentation will be conducted at their centers to educate and instruct them to have an improved knowledge of their oral health, as some studies suggested media/screen is the ideal educational tool for children with ASD because of them tend to favor visual stimulation <sup>(7,8)</sup>.

#### Aim of study

Autism Spectrum Disorder (ASD) in children is characterized by impairments in communication and social relationships and by a narrow, repetitive activities, behaviors and interests. The aim of this work is to evaluate the current status of their oral health and how do these characteristics have an impact on the level of their oral hygiene. Also exploring the possibility to raise a communication channel to educate them about the importance of their oral health to include regular dental visits as well as adding tooth brushing, good diet to their daily routine.

**Table 1** dmft Index

Code	No.	Status	dmft
A	1	Sound	Sound
B	2	Caries	Decayed (d)
C	3	Filled with caries	Decayed (d)
D	4	Filled no caries	Filled (f)
E	5	Missing due to caries	Missed (m)
F	6	Fissure sealant therapy	Sound
G	7	Crown	Filled (f)

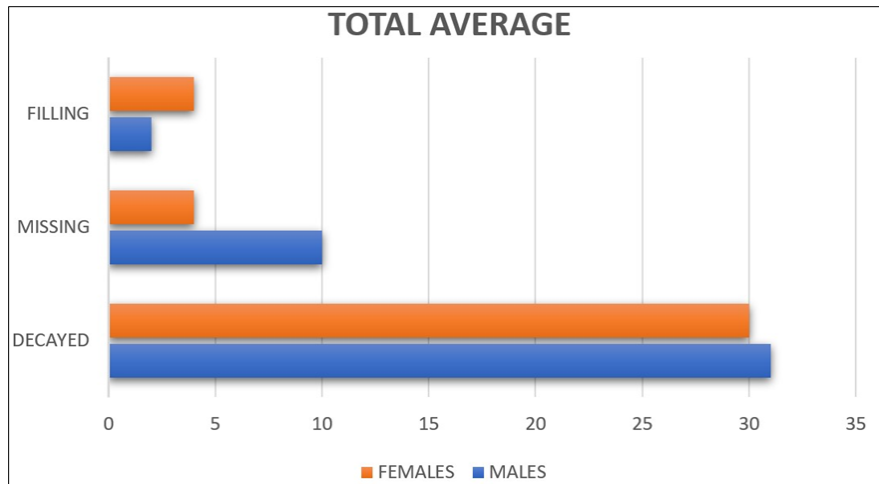
### 4. Results

Upon full examination of the children’s medical history, subjects were examined by two dentists in a well-lit room in addition to head strap flashlights on a portable dental chair, using only a mouth mirror and an explorer, each child was brought by a teacher to accompany them during the examination. Most of them showed positive response and the will to get checked for their teeth, 90 were able to comply for the examination, while 20 refused to show up.



**Figure 1** Male and Female dmft record

The 90 children (46 males, 44 females) who were screened using the DMFT index with codes and criteria established by the WHO <sup>(11)</sup>, 61 showed at least 1 decayed tooth, 6 showed previous filling in their teeth, while 14 showed missing teeth and 9 good oral hygiene with no filling or decayed or missing teeth to be registered.



**Figure 2** Total average of Males and Females dmft Findings

## 5. Discussion

### 5.1. The Connection Between ASD And the Oral Health Status

ASD children usually have normal oral health status. However, that disorder might interfere with obtaining a regular good oral health most of the time, according to Gandhi and Klein, most people diagnosed with ASD have worse oral health than the general population <sup>(12)</sup>. Due to some issues obstructing a better oral health such as limitation in their communications, unusual eating and sleeping habits, unusual mood or emotional reactions, anxiety, stress or excessive worry. Due to their limited dexterity, we can expect a higher risk caries between autistic children which shows difficulties in tooth brushing or flossing that will result in an inadequate oral health hygiene <sup>(13)</sup>. According to a meta-analysis done by Da Silva et al showed an increased cases of dental caries or decayed teeth between patients with ASD and the pooled prevalence was 60.6% (95% CI: 44.0-75.1) <sup>(14)</sup>.

**Table 2** Sum and Percentage of dmft Between Males and Females

	Decayed	Missing	Filling	Sound	Total
Male	31	10	2	3	46
Female	30	4	4	6	44
Total	61	14	6	9	90
Percentage	67.78%	15.56%	6.67%	10.00%	100.00%

Diet is also another factor to be considered between ASD patients, as they tend to incline to sweets and soft foods <sup>(15)</sup>. Which is a main reason for being an easy target to dental caries <sup>(16)</sup>.

### 5.2. ASD And the Dental Treatment Relationship

Another factor that might obstruct a good oral hygiene between ASD children, is their poor and limited collaboration with the dental staff during dental examination and especially if it includes an invasive procedure. As they easily feel anxious, agitated and emotional. All that which leads to hypersensitivity to their sensory input <sup>(16)</sup>. All these features create difficulties for the dentist to proceed with any dental treatment with ASD patients as they might interfere with the designated procedure, that's why according to Capp et al. most of the ASD patients go under sedation or general anesthesia during their treatment <sup>(17)</sup>.

**Table 3** Comparison Between Males and Females Mean Results

	<b>Males</b>	<b>Females</b>
Decayed	31	30
Missing	10	4
Filling	2	4
Sound	3	6
Mean/dmft	11.5	11

Children with ASD commonly obtain a harmful habit in their oral cavity such as bruxism, tongue thrust, biting on their lips or any hard objects. These behaviors could be prevented by recommending a mouthguard by the dentist as a safe approach to prevent any of these harmful habits.

### 5.3. Approaching different directions with ASD

In 2016, Popple et al did a controlled randomized study indicating that an improved oral hygiene between ASD children could happen through showing video tutorials on brushing techniques delivered to the patients through the internet. After three weeks, it showed a clear improvement in their oral health including an improved plaque index between the children after getting to learn how to improve their brushing techniques through watching the video <sup>(18)</sup>.

Each decade, the number of ASD born children is significantly increasing, thus taking importance of maintaining a good oral hygiene is becoming more and more challenging. That's why obtaining different approach in guiding them for a better oral health is to be considered.

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## 6. Conclusion

Over the past decade, ASD cases have been on the rise, thus knowledge and awareness of their condition should be considered to obtain a better understanding and maintain a good general health especially oral hygiene. The scope of this study showed the need of improvement between ASD children at early stage in different aspects such as their caries risk, diet and their habits. Dentists could reduce if not eliminate all these issues, with the combined help of their parents who hold a key role in creating a better link or a relationship between the child and his pediatrician to help gain an adequate oral health through their life.

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## Compliance with ethical standards

### *Acknowledgement*

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### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of ethical approval*

The present research work does not contain any unethical studies performed on animals/humans subjects by any of the authors.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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## References

- [1] Rapin I, Tuchman RF. Autism: definition, neurobiology, screening, diagnosis. *Pediatr Clin North Am*. 2008, 55:1129–46.
- [2] Rice C, Schendel D, Cunniff C, Doernberg N. Public health monitoring of developmental disabilities with a focus on the autism spectrum disorders. *Am J Med Genet C Semin Med Genet*. 2004, 125:22–7.
- [3] (CDC) Features: CDC study-an average of 1 in 110 children have an ASD. Network: Centers for Disease Control and Prevention, 2011. [cited 2011 August].
- [4] Lowe O, Lindemann R. Assessment of the autistic patient's dental needs and ability to undergo dental examination. *ASDC J Dent Child* 1985, 52(1):29-35.
- [5] Klein U, Nowak AJ. Characteristics of patients with autistic disorder (AD) presenting for dental treatment: a survey and chart review. *Spec Care Dentist* 1999, 19(5):200-207.
- [6] Fahlvik-Planefeldt C, Herrstrom P. Dental care of autistic children within the non-specialized Public Dental Service. *Swed Dent J* 2001, 25(3):113-118.
- [7] Isong IA, Rao SR, Holifield C, et al. Addressing dental fear in children with autism spectrum disorders: A randomized controlled pilot study using electronic screen media. *Clin Pediatr (Phila)*. 2014, 53(3):230-237.
- [8] Shane H, Albert P. Electronic screen media for persons with autism spectrum disorders: Results of a survey. *J Autism Dev Disord*. 2008, 38(8):1499-1508.
- [9] Eades D, Leung P, Cronin A, Monteiro J, Johnson A, Remington A. UK dental professionals' knowledge, experience and confidence when treating patients on the autism spectrum. *Br Dent J* 2019, 227: 504-510.
- [10] Onol S, Kirzioğlu Z. Evaluation of oral health status and influential factors in children with autism. *Niger J Clin Pract* 2018, 21:429-435.
- [11] World Health Organization. *Oral Health Surveys. Basic method*. 4th ed. Geneva: WHO, 1997.
- [12] Gandhi RP, Klein U. Autism spectrum disorders: an update on oral health management. *J Evid Based Dent Pract* 2014, 14Suppl:115-26.
- [13] Onol S, Kirzioğlu Z. Evaluation of oral health status and influential factors in children with autism. *Niger J Clin Pract* 2018, 21:429-435.
- [14] da Silva SN, Gimenez T, Souza RC, Mello-Moura ACV, Raggio DP, Morimoto S, et al. Oral health status of children and young adults with autism spectrum disorders: systematic review and meta-analysis. *Int J Paediatr Dent* 2017, 27:388-398.
- [15] Weddell JA, Sanders BJ, Jones JE. *Dental problems of children with disabilities. Dentistry for the Child and adolescent* 8th ed. MO: Mosby: St. Louis. 2004.
- [16] Summers J, Shahrami A, Cali S, D'Mello C, Kako M, Palikucin-Reljin A et al. Self-Injury in Autism Spectrum Disorder and intellectual disability: exploring the role of reactivity to pain and sensory input. *Brain Sci* 2017, 7: pii: E140.
- [17] Capp PL, de Faria ME, Siqueira SR, Cillo MT, Prado EG, de Siqueira JT. Special care dentistry: Midazolam conscious sedation for patients with neurological diseases. *Eur J Paediatr Dent* 2010, 11:162-4.
- [18] Popple B, Wall C, Flink L, Powell K, Discepolo K, Keck D, et al. Brief Report: Remotely Delivered video modeling for improving oral hygiene in children with ASD: A pilot study. *J Autism Dev Disord* 2016, 46:2791-2796.