



## Dental Caries Experience of Children with Autism Spectrum Disorder

Abdalmawla Alhussin Ali<sup>1\*</sup> and Karima Ali Belgasem<sup>2</sup>

<sup>1</sup>Department of Orthodontics, Faculty of Dentistry, Sirte University, Libya

<sup>2</sup>Department of Oral Pathology, Faculty of Dentistry, Sirte University, Libya

\*Corresponding Author: Abdalmawla Alhussin Ali, Department of Orthodontics, Faculty of Dentistry, Sirte University, Libya.

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### Abstract

Autism spectrum disorder (ASD) is a set of neurological, psychological and developmental disorders that occur in early childhood. Difficulty in social interactions and communication these are the most important characteristic of individuals with autism.

**Objective:** Our study was carried out to assessment of dental caries level of children with autism spectrum disorder (ASD) in Sirte, Libya.

**Material and Methods:** Descriptive cross-sectional study, consisted of 24 subjects with ASD 14 were males and 10 females whose age ranged from 3 to 14, the mean being 7.3. Examination for dental caries, using the decayed, missing and filled teeth index (DMFT/dmft) according to the WHO criteria.

**Results:** The present study determined that 66% of autistic patients had caries, and the caries index was higher in older autistic children.

**Conclusion:** The results of this study indicate that educational programs regarding oral hygiene and healthy diet may improve oral self-care in autistic children.

**Keywords:** Oral Health; Autistic Spectrum Disorder; Dental Caries; Sire-Libya

### Introduction

Autism spectrum disorder (ASD) is a neurological and developmental disorder that occur in early childhood which was first described in 1943 by Kanner. [1]. He reported a group of children as they expressed fail social and behavioral interactions, communication deficiencies, and developmental retardation [1,2]. The prevalence of autism is 1 case for every 100 children worldwide, which representing over a 6,000% increase with respect to the last few decades, the incidence of autism was 1 in 110 American children or 1 in 70 American boys in 2007 [3] it is more common in male than female, with a 4:1 rate [2,4] The most important characteristic are associated to socialization problems, communication limitations, repetitive, stereotyped behavior; and cognitive inflexibility [1,2].

The causes of autism are not well understood but are likely linked to altered structure of the brain at birth. It is classified as idiopathic, which has a non-specific genetic base, and 70% of the cases associated with mental retardation and syndromic autism, which presents some neurological conditions, in many cases with a genetic base.

There is not any oral manifestation specific to patient with ASD, special conditions may become manifest due to behaviors related to this syndrome, like eating habits, hyposensitivity to pain self-injurious behavior and effects of medication [5,6].

Studies for assessment of autistic's oral health have not paid enough attention due to specific autistic behavioral characteristics. Number of previous studies [7-9] reported in different countries that children with ASD had better gingival health and low caries prevalence despite poorer hygiene conditions and less visits to the dentist than controls without ASD. Rai, *et al*, [10] revealed that there was no significant difference in caries indexes of autistic children compared to non-ASD individuals. Due to the limited studies are available in this field in Sirte, increasing prevalence of autism and importance of oral health in people with ASD, therefore, the aim of our study was to determine the dental caries experience of a group of children with autism in Sirte City -Libya.

### Material and Methods

A descriptive cross-sectional study was used. The total sample comprised 24 children, 14 of them males and 10 females, aged be-

tween 3 and 14 years diagnosed with ASD and in specialized services in Sirte City - Libya. The permission to conduct our study was gained from the director of the rehabilitation center, and informed consent was obtained to participate in the present study. Demographic information concerning the subject’s age and gender, were recorded, also the medical records of each child were checked, taking note of the habits and their following or not a recommended diet. Participants were examined for dental caries, using the decayed, missing and filled teeth index (DMFT/dmft) according to the WHO criteria by one examiner with the help of a mirror and explorer under artificial light, as well the examiner used disposable masks and gloves in order the risk of cross infection evaluating for the presence of caries, plaque, and calculus.

**Statistical analysis**

The analysis was performed using the statistical analysis program SPSS (Statistical Package for Social Sciences), version 20. Descriptive statistics were obtained using proportions; mean and standard deviation findings were compared across age groups (3-8 years and 11-14 years) and gender. Independent samples t-test, the significance level was set at (p < 0.05)

**Results**

In our study 24 autistic children were evaluated, 14 of them are males (58.3%) and 10 are females (41.6%). Their ages ranged from 3-14 years; the mean age of the children focused in this study was 7.3. The number of children which carries free was 7 (2.9%) and did not have any clinically evident carious lesion. and the remainder of the patients had caries, with an index result of DMFT= 0.96 and dmft = 2.41.

As for the (D/d) component, it was found that 16 children (66.6%) have had dental caries in one tooth or more. In addition, when looking to the number of missing teeth due to caries was 11 (45.8%) of the sample, while two (8.3%) of children the overall sample who have had at least one or more filled tooth (F/f) (Table 2). In reference to the sex of the participants and the present of caries, it was observed that in males the mean DMFT/dmft scores was 3.42 and in females 3.19, the difference was not statistically significant between both gender (Table 3).

Regarding to the age of the subject of the sample and the experience of caries, in the 3 to 8 year –old group, 64.7% of the children had caries and the mean dmft score was dmft = 1.94, while In the 9 to 14 year-old group, 85.7% had caries and the mean DMFT was 3.42 in this group and there was no statistical difference both age groups (Table 4)

Variables	Variables	N (%)
Decayed Teeth D/d	0	8 33.3%
	≥ 1	16 66.6%
Missed Teeth M/m	0	13 54.1%
	≥ 1	11 45.8%
Filled Teeth F/f	0	22 91.6%
	≥ 1	2 8.3%
DMFT / dmft	0	3 12.5%
	≥1	21 87.5%

**Table 2:** Evaluation of DMFT/dmft index of the sample.

Variable	N (%)
Gender	
Male	14 58.3%
Female	10 41.6%
Age	
(3-8)	17 70.8%
(11-14)	7 29.1%
Education	
KG1	3 12.5%
Primary school	21 87.5%

**Table 1:** Characterization of the sample N-24.

Variables	Male (14) Mean ± SD	Female (10) Mean ± SD	P-value
Decayed Teeth	2.85 ± 2.10	2.01 ± 2.02	NS
Missed Teeth	0.51 ± 1.08	1.08 ± 2.00	NS
Filled Teeth	0.07 ± 1.01	0.10 ± 0.103	NS
DMFT / dmft	3.42 ± 3.16	3.19 ± 4.05	NS

**Table 3:** Caries experience of children by gender.

NS: no statistically significant.

Caries		
	Present	Absent Total
Age 3-8 years	11	6 17
9-14 years	6	1 7
Total	17	7 24

**Table 4:** Presence of caries according to age group.

**Discussion**

Oral hygiene plays an important role in the development and progression of dental caries, autistic patients have oral health problems as dental caries, poor oral hygiene similar to those of normal children [11,12]. Autistic children generally present a challenge to the dental care and dentists, because becomes necessary to put them under general anesthesia to carry out the dental treatment. The aim of our study was to determine the dental caries experience of a group of children with autism in Sirte City -Libya.

The present study reported that 66.6% of autistic children had caries, this result indicated that the caries prevalence and severity was high among ASD children in Sirte These results match those of previous study aimed to assess the prevalence of dental caries experience among ASD patients [13,14], and reported that 77% of the children of the sample presented caries, while the healthy patients in the control group was 46%. likewise, previous research by Namal [15], that reported after evaluating 62 autistic patients and concluded that 58.1% had some caries experience and 41.9% of the sample was caries free. The high caries prevalence may be due to children’s preference of sweet and high-sugar foods. The high sweet food consumption frequency was similar to other previous studies conducted in healthy children [16-19]. Similar findings of preferences for sweet food consumption and high consumption level of carbonated soft drinks among patients with ASD were reported from different parts of the world [20,21]. Another possible reason for the our study’s findings is that autistic patients related to behavioral difficulties of and poor motor skills of some ASD children, which made tooth brushing difficult by ASD children.

The results of the present study disagree with those of Du., et al. [22] who reported that 37% of autistic children had caries and with Marshall., et al. [23], determined that 40% of the sample

children with ASD presented new carious lesions, and 65% of the sample had a history of caries.

The important factor that affects the development of caries is the age of patients, the findings of our study revealed that the caries index was higher in older autistic children group than younger group. Similar results were obtained by Bassoukou., et al. [24], reported that a dmft = 2.00 ± 2.83 in autistic children and 1.79 ± 3.07 in the control group. Likewise, by Jaber [24] determined that the autistic children showed higher DMFT indexes more frequently. These results are in contrast with previous study [25] in Denmark, which evaluated a sample of 28 patients with ASD, and 20 controls and which reported that the primary teeth of autistic children showed a higher caries index.

**Conclusions**

The results of our study indicated that caries experience is high among children with autism disorder. This result indicates the need for education programs aiming to encourage the inclusion children with ASD in the basic habits of oral care carried-out by the families. The current study has provided baseline data regarding caries experience in ASD children and would help for developing oral health preventive programs and focus on treatment needs for this group of patients in Libya. Highly recommended for autistic children are low-sugar diets, tooth brushing, and dental visits for check-ups and regular fluoride applications.

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