

Dental Caries Experience of Children with Autism Spectrum Disorder

Abdalmawla Alhussin Ali^{1*} and Karima Ali Belgasem²

¹Department of Orthodontics; Faculty of Dentistry; Sirte University; Libya.

²Department of Oral Pathology; Faculty of Dentistry; Sirte University; Libya.

*Corresponding Author: Abdalmawla Alhussin Ali, Department of Orthodontics; Faculty of Dentistry; Sirte University; Libya, Tel: 00218910544754, E-mail: abdalmawla.ali@su.edu.ly

Citation: Abdalmawla Alhussin Ali, Karima Ali Belgasem (2023) Dental Caries Experience of Children with Autism Spectrum Disorder. Stechnolock J Dent 3: 1-7

Copyright: © 2023 Abdalmawla Alhussin Ali. This is an open-access article distributed under the terms of Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

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 occurs 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 characteristics 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 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 between 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.

Table 1: Characterization of the sample N-24

Variable	N	(%)
Gender		
Male	14	58.30%
Female	10	41.60%
Age		
(3-8)	17	70.80%
(11-14)	7	29.10%
Education		
KG1	3	12.50%
Primary school	21	87.50%

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)

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

Variables	Variables	N	(%)
Decayed Teeth	0	8	33.30%
	≥ 1	16	66.60%
D/d			
Missed Teeth	0	13	54.10%
	≥ 1	11	45.80%
M/m			
Filled Teeth	0	22	91.60%
	≥ 1	2	8.30%
F/f			
DMFT / dmft	0	3	12.50%
	≥1	21	87.50%

Table 3: Caries experience of children by gender

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

NS: no statistically significant

Table 4: Presence of caries according to age group

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

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 [21] 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.

Conclusion

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.

References

1. Landrigan P (2010) What cause autism? Exploring the environmental contribution. *Current Opinion in Pediatrics* 22: 1-7.
2. Namal N, Vehit HE, Koksall S. (2007) Do autistic children have higher levels of caries? A cross-sectional study in Turkish children. *J Indian Soc Pedod Prev Dent* 25: 97-102.
3. Rekha CV, Arangannal P, Shahed HJEAoPD (2012) Oral health status of children with autistic disorder in Chennai. *European Archives of Paediatric Dentistry*.
4. Varela M, Ruiz-García M, Vela-Amieva M, Munive-Baez L, Hernández-Antunez BG (2011) Conceptos Actuales sobre la etiología del Autismo. *Acta Pediatr Mex* 32: 213-22.
5. DeMattei R, Cuvo A, Maurizio S. Oral assessment of children with an autism spe5. Artigas-Pallarés J, Gabau-Vila E, Guitart-Feliubadaló M. *El autism sindrómico: I*.
6. Aspectos Generales. *Rev Neurol* 40: 143-9, 2005. ctrum disorder. *J Dent Hyg* 81: 65, 2007.
7. da Silva SN, Gimenez T, Souza R, Mello-Moura A, Raggio D, et al. (2017) Oral health status of children and young adults with autism spectrum disorders: systematic review and meta-analysis. *Int J Pediatr Dent*.
8. Loo CY, Graham RM, Hughes CVJTJotADA (2008) The caries experience and behavior of dental patients with autism spectrum disorder. *The J Am Dent Assoc*.
9. Fahlvik-Planefeldt C, Herrstrom PJSJ. (2001) Dental care of autistic children within the non-specialized Public Dental Service. *Swedish Dental Journal* 25:3.
10. Rai Kavita, Hegde Amitha M, Jose Nijo. (2012) Salivary antioxidants and oral health in children with autism. *ARCH ORAL BIOL* 57: 1116-20.
11. Morales-Chavez, M.C. (2017) Oral Health Assessment of a Group of Children with Autism Disorder. *J. Clin. Pediatric Dent* 41: 147-9.
12. Onol, S, Kirzioglu Z. (2018) Evaluation of oral health status and influential factors in children with autism. *Niger. J. Clin. Pract* 21: 429-35.
13. Jaber MA. (2011) Dental caries experience, oral health status and treatment needs of dental patients with autism. *J Appl Oral Sc* 19: 212-17.
14. Ali AA, Belgasem KA (2021) Tooth Size Discrepancy among Different Malocclusion Groups in a Libyans Sample 1:7.
15. Namal N, Vehit HE, Koksall S (2007) Do autistic children have higher levels of caries? A cross-sectional study in Turkish children. *J Indian Soc Pedod Prev Dent* 25: 97-102.
16. Akpata ES, Al-Shammery Arm, Saeed HI (1992) Dental caries, sugar consumption and restorative dental care in 12–13-year-old children in Riyadh, Saudi Arabia. *Community Dentistry and Oral Epidemiology* 20: 343-6.
17. Al Ghanim NA, Adenubi JO, Wyne AA, Khan NB (1998) Caries prediction model in pre-school children in Riyadh, Saudi Arabia. *International Journal of Pediatric Dentistry* 8: 115-122.

18. Al-Tamimi S, Peterson P (1998) Oral health situation of school children, mothers and schoolteachers in Saudi Arabia. *International Dental Journal* 48: 180-6.
19. Al-Sadhan SA (2003) Oral health practices and dietary habits of intermediate school children in Riyadh, Saudi Arabia. *Saudi Dental Journal* 15: 81-7.
20. O'Brien G, Whitehouse AM (1990) A psychiatric study of deviant eating behavior among mentally handicapped adults. *British Journal of Psychiatry* 157: 281-4.
21. Al-Khadra TA (2011) Prevalence of dental caries and oral hygiene status among autistic children in Riyadh, Saudi Arabia. *Egyptian Dental Journal* 57: 1299.
22. Du RY, Yiu CK, King NM, Wong VC, McGrath CP (2015) Oral health among preschool children with autism spectrum disorders: A case-control study, *Autism* 19: 746-51.
23. Marshall J, Sheller B, Mancl L (2010) Caries-risk assessment and caries status of children with autism. *Pediatr Dent*, 32: 69-75.
24. Bassoukou IH, Nicolau J, Dos Santos MT (2009) Saliva flow rate, buffer capacity, and pH of autistic individuals. *Clin Oral Invest* 13: 23-7.
25. Lowe O, Lindemann R (1985) Assessment of the autistic patient's dental needs and ability to undergo dental examination. *ASDC J Dent Child* 3: 29-35.