

Research Article

Oral hygiene status among group of Egyptian autistic children: A cross sectional survey

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Abstract

Objectives: The purpose of the study was to evaluate the oral hygiene status on (50) Egyptian children with autism. **Materials and methods:** Examination and Detection of the status of oral hygiene by using simplified oral hygiene index which were done by two pediatric dentists with at least 5 years of experience with dental mirror, dental explorer and portable light source **Results:** The OHI-S scoring showed that 100% of autistic patients of the current study have poor oral hygiene. **Conclusion:** Autistic patients in Egypt required more dental services that should be provided by experienced dental professionals

Key words: Egyptian autistic children, autism, OHI-S, Permanent dentition

Introduction

The WHO determined individuals that suffer from disabilities as 10% of the population in developed countries and 12% in developing countries. (Jockusch et al., 2020) Children with physical, mental or medical disabilities often require special care dentistry. (Waly et al., 2020).

Autism spectrum disorder (ASD) was recognized by American Psychiatric Association (APA) as a neurodevelopmental disorder which was characterized by qualitative abnormalities in patterns of communication and reciprocal social interactions with restricted, stereotyped, repetitive interests and activities. (Durukan et al., 2018, Lam et al., 2016)

The Autistic spectrum disorders were recognized by international classification of disease (10th edition) as Pervasive Developmental Disorders (PDDs) which are a group of neurological disorders that characterized by impairments in socialization and communication domains (Johnson et al., 2019)

The variations in behavioral patterns and severity of illness that existed among children with ASD, has led to the development of a number of classification systems. Thus, the term Autism Spectrum Disorders (ASDs) is used to describe the group of Pervasive

Developmental Disorders that included; Autism, Rett's Syndrome, Childhood Disintegrative Disorder, Asperger's Syndrome, Pervasive Developmental Disorder (Johnson et al., 2019, Ecker et al., 2020).

Autism is one of mental disability that required special dental care and was defined by American Psychiatric Association "Autism spectrum disorder is a pervasive neurodevelopmental disorder characterized by impairment in social communication and restricted, repetitive patterns of behavior, interests or activities a form of mental illness that causes a person to withdraw into a private world of fantasy and be unable to communicate with others or respond to the real environment". (Mesibov et al., 2017)

The Childhood Autism Rating Scale (CARS) was widely used for autism diagnosis and for detection of disease severity. This scale included 15 criteria of child evaluation with a score ranged from 15 to 60 and classifying autistic children as following; 1) mild to moderate (score= 30-37) and sever (score 38-60).

Due to enhancement and changes in autism diagnostic measures in combination with increasing of public awareness and service availability, there was a dramatic increase in cases number. (Centers for Disease Control and Preventio (2011))

The autistic children have several oral features due to their behavior as limited communication, mutilating oral habits and poor oral hygiene due to oral care resistance and personal negligence. (Morales-Chávez et al., 2017).

The services that available for dental treatment for autistic patients was reported to be limited due to restricted knowledge and experience of dentists in how to manage such cases in addition to limited financial resources and charity participation for help of cases poor families. (Purohit et al., 2010)

Management of autistic patients requires familiarization and desensitization of preventive and corrective measures which would help in improving their oral hygiene measures and general oral health. (Waldman et al., 2008)

Patients and Methods

50 children who met the inclusion criteria were selected with block randomization

The selected children should fulfill the following eligibility criteria: inclusion criteria, children were classified as mild and moderated autistic status according to the childhood autism rating scale (CARS) and exclusion criteria, the children with sever conditions and those with other physical disabilities.

The parents of selected children were asked for signing an informed consent including their acceptance to perform dental examination to their children. After children examination they were referred to dental facilities that could perform any required treatment.

Assessment and calibration of the oral hygiene of participants was done by two pediatric dentists with at least 5 years of experience using simplified oral hygiene index (OHI-S). For measuring of OHI-S, the six surfaces examined were selected from four posterior and two anterior teeth as following: (1) In the posterior portion of the dentition, the buccal surfaces of the first permanent upper molars and the lingual surfaces of the lower ones were inspected and (2) In the anterior portion of the mouth, the labial surfaces of the upper right permanent central and the lower left central incisor were inspected. In the absence of either of this

anterior tooth, the central incisor on the opposite side of the midline is substituted.

Following criteria were used to score simplified debris index DI-S: (0) No debris or stain present, (1) Soft debris covering not more than one third of the tooth surface, or presence of extrinsic stains without other debris regardless of surface area covered, (2) Soft debris covering more than one third, but not more than two thirds, of the exposed tooth surface, and (3) Soft debris covering more than two thirds of the exposed tooth surface. While for calculus index simplified CI-S the following criteria were adopted: (0) No calculus present, (1) Supragingival calculus covering not more than third of the exposed tooth surface, (2) Supragingival calculus covering more than one third but not more than two thirds of the exposed tooth surface and (3) Supragingival calculus covering more than two third of the exposed tooth surface or a continues heavy band of subgingival calculus around the cervical portion of the tooth or both.

After the scores for debris and calculus are recorded, the Index values are calculated. For each individual, the debris scores are totaled and divided by the number of surfaces scored. At least two of the six possible surfaces must have been examined for an individual score to be calculated. After score for a group of individuals is obtained by computing the average of the individual scores. The average individual or group score is known as the Simplified Debris Index (DI-S). The same methods are used to obtain the calculus scores or the Simplified Calculus Index (CI-S). The average individual or group debris and calculus scores are combined to obtain the Simplified Oral Hygiene Index.

The CI-S and DI-S values may range from 0 to 3; the OHI-S values from 0 to 6. Children's oral hygiene were classified as good, fair and poor according to OHI-S index rating as following good (score= 0-1.2), fair (score= 1.3-3) and poor (score= 3.1- 6). Data were tubulated and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) and Chi square test were used for data analysis.

Results

Demographic data demonstrated the following distribution: males represented 70% (35

child)and females represented 30% (15 child), age ranged from 7 to 13 years with mean+ SD of 9.9+2.01. For severity 28% (14 child) were classified as mild cases and 72% (36 child) were classified as moderate.

The OHI-S scoring showed that 100% of autistic patients of the current study have poor oral hygiene. Minimum, maximum and mean+SD were described in the following table:

	Min	Max	Mean+SD
DI-S	2	2.6	2.21+0.16
CI-S	1.2	1.75	1.38+0.12
OHI-S	3.25	3.95	3.59+0.19

Discussion

As increasing concern about autistic children oral condition particularly dental caries and periodontal diseases, this study was conducted as across-sectional study for detection of OHI-S for autistic patients in Egypt providing a solid data for further care improvement of this group of population and to detect there needs of providing dental treatment and preventive programs.

OHI-S were used through the study as being a simple and reliable index that was performed in previous studies (4) thus allow for comparison with former available data. Data provided by the current study demonstrated that 100% of subjects have a poor oral hygiene those patients with mean+ SD of 3.59+0.19.

The results of the current study showed that Egyptians children that suffer from mild to moderate autism had lower OHI-S average value than Indians of 2.19 average score as demonstrated by Subramaniam and Gupta, 2011 or 2.07 average score as demonstrated by Rich et al., 2014. Also, same findings were founded in comparison with Chilean autistic patients that showed an average OHI-S index score of 1.03 as demonstrated by Orellana et al., 2019 and for Iraqi children that demonstrated an average OHI-S of 1.29 as reported by Hussein et al., 2018.

By comparison to the previous mentioned studies, it was clear that Egyptian autistic patients require more oral care to obtain better oral hygiene and overall quality of life.

Conclusions:

From the current study results that can be concluded "Autistic patients in Egypt required

more dental services that should be provided by experienced dental professionals"

References

1. Jockusch, J., Sobotta, B. A., & Nitschke, I. (2020). Outpatient dental care for people with disabilities under general anaesthesia in Switzerland. *BMC Oral Health*, 20(1), 1-14.
2. Waly, A. S. (2020). Dental Management of Children with Special Health Care Need. *EC Dental Science*, 19, 01-08.
3. Durukan, İ., Kara, K., Almbaideen, M., Karaman, D., & Gül, H. (2018). Alexithymia, depression and anxiety in parents of children with neurodevelopmental disorder: Comparative study of autistic disorder, pervasive developmental disorder not otherwise specified and attention deficit–hyperactivity disorder. *Pediatrics International*, 60(3), 247-253.
4. Lam, J., Sutton, P., Kalkbrenner, A., Windham, G., Halladay, A., Koustas, E., ... & Woodruff, T. (2016). A systematic review and meta-analysis of multiple airborne pollutants and autism spectrum disorder. *PloS one*, 11(9), e0161851.
5. Johnson, D. A., Jackson, C. L., Williams, N. J., & Alcántara, C. (2019). Are sleep patterns influenced by race/ethnicity—a marker of relative advantage or disadvantage? Evidence to date. *Nature and Science of Sleep*, 11, 79.
6. Ecker, C., & Murphy, D. (2020). Imaging of autism spectrum disorders. *New Oxford Textbook of Psychiatry*, 279.
7. Mesibov, G., & Sreckovic, M. (2017). Child and juvenile pornography and the autism spectrum disorder. Caught in the web of the criminal justice system:

- Autism, developmental disabilities and sex offences, 64-94.
8. Centers for Disease Control and Prevention. (2011) CDC Features: CDC study an average of 1 in 110 children has an ASD. Available at www.cdc.gov/features/countingautism/. Accessed October 24th.
 - a. Morales-Chávez, M.C., 2017. Oral health assessment of a group of children with autism disorder. *Journal of Clinical Pediatric Dentistry*, 41(2), pp.147-149.
 9. Purohit BM, Acharya S, Bhat M.(2010) Oral health status and treatment needs of children attending special schools in South India: a comparative study. *Spec Care Dentist* 2010; 30: 235–241.
 10. Waldman HB, Perlman SP, Wong A. (2008) Providing dental care for the patient with autism. *J Calif Dent Association*; 36: 662–670.
 11. Jaber M. A. (2011). Dental caries experience, oral health status and treatment needs of dental patients with autism. *Journal of applied oral science: revista FOB*, 19(3), 212–217. <https://doi.org/10.1590/s1678-77572011000300006>
 12. El Khatib, A.A., El Tekeya, M.M., El Tantawi, M.A. and Omar, T., 2014. Oral health status and behaviours of children with Autism Spectrum Disorder: a case–control study. *International Journal of Paediatric Dentistry*, 24(4), pp.314-323.
 13. Martínez ME and Zandoná A. 2013 The Impact of Gender on Caries Prevalence and Risk Assessment. *Dental clinics of North America*.; 57: 301-315.
 14. Lukacs JR. 2011 Sex differences in dental caries experience: clinical evidence, complex etiology. *Clin Oral Investig*. Oct;15(5): 649-56.
 15. Al-Rafee MA, AlShammery AR, Al Rumikan AS, Pani SC. 2019 A Comparison of Dental Caries in Urban and Rural Children of the Riyadh Region of Saudi Arabia. *Front Public Health*. Jul 16;7:195. doi: 10.3389/fpubh.2019.00195. PMID: 31380335; PMCID: PMC6646737.