

Dental Caries and Oral health status in Georgian Autistic Patients: an Observational Study

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Abstract

Patients with ASD, especially in children, have obvious problems with managing dental behavior (non-cooperative behavior). In particular, in patients with ASD, the degree of their non-cooperation during dental intervention is 50-72% higher than in children with normal development. The low degree of oral hygiene in patients with this spectrum disorder complicates the prevention of dental diseases, which ultimately contributes to the spread of dental diseases, especially severe periodontal pathologies. This process is further facilitated by the lack of adaptation of dental services for patients with ASD in Georgia.

According to literature data, dental diseases are common in patients with autism spectrum disorders, in particular, caries, periodontal disease, as well as self-injury due to their behavior, both in the oral cavity and outside. The above diseases have a negative impact on the lives of both healthy children and children with ASD.

Whereas, the manifestations of autism are sharply increased worldwide, within the framework of public health, there is a need for training/retraining of dental clinics and dentists to treat patients with ASD. According to HWO 2013 data, the prevalence of autism was 160:1, and currently this proportion has changed significantly at the expense of increasing the number of patients and ratio is 59:1.

Due to prevalence of autism has increased dramatically, according to literature data, dental treatment planning should be considered with the patient's condition and needs of the individual review, also, adapting the clinic, which will increase the quality of cooperation between the doctor and the patient with ASD. Their fears and emotions should also be taken into account as well, which is a very important factor and complicates the treatment process.

Keywords: ASD patient; Caries prevalence; Periodontal diseases; Oral hygiene

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Material and Methods

180 patients with autism aged 3-18 years (142 males and 38 females) from Autism Centers were selected for the study. Each patient received a complete oral and periodontal examination, assessment of caries prevalence, and caries severity. Other conditions assessed were dental plaque, gingivitis, restorations and treatment needs. The association of comorbidities and medications with the development of caries has been studied. Chi-square and Fisher's exact test of significance were used.

180 patients with autism aged 3-18 years (142 males and 38 females) attending autism centers of Tbilisi, Georgia, were selected for the study. The study contingent was divided into three groups: 3-6, 7-12, 13-18 years old respondents. The age division was due to the peculiarity of occlusion, with the period of primary, mixed and permanent dentition [1].

The centers offer an intensive rehabilitation program only for children diagnosed with autism. All the children had been previously examined and diagnosed medically as autistic patients according to the center's medical records.

Consent for examining the children was obtained from the parents.

The inclusion criteria involved were:

- Diagnosis of autism
- Consent
- Age between 3 and 18 years.

Exclusion Criteria were:

- Suffering from other diseases known to influence dental caries or the severity of periodontal disease such as Epilepsy or Mental retardation.

According to these criteria, 180 patients with autism were included in this study.

According to the socio-economic status, the contingent of respondents was divided as follows: high - 0.6%, medium - 90.9%, low - 8.5%.

Results

Children with autism had significantly high decayed, missing or filled teeth. The gingival index and hygiene index were also high. There was a difference in age groups.

Examination

Following a complete medical history, all subjects were examined by one examiner for oral hygiene status and dental caries using dental mirror, explorer and a periodontal probe with William's markings. The examination of the soft and hard tissues was done under flash light and regular room light. Gingival status was recorded as generalized or localized gingival inflammation depending on the amount of gingival redness and bleeding during the examination. Oral hygiene was recorded as good, fair or poor according to the Simplified Oral Hygiene Index (SOHI)10. Before examinations, intraobserver agreement for the diagnosis of caries was checked [2].

Prevalence of caries and periodontal disease

As mentioned above, the study was performed on patients aged 3-18 years, a dental mirror and probe were used for the study, and a periodontal probe was used to determine the gingival index. The number and condition of caries, extracted and decayed teeth were assessed. Caries was detected through the probe, and oral hygiene index was assessed by detecting tooth plaque on the tooth surface. At which time the plaque on the cheekbones, tongue, and lip surface of 11, 16, 26, 31, 36, 46 teeth were assessed. The gingival index was also assessed for the presence of plaque, bleeding, and pockets.

After examining the oral cavity of the study contingent, the condition of their oral cavity was assessed as follows: caries 583 teeth, decayed 75, extracted 254 teeth. As it turned out, the extracted teeth are more than the decayed teeth, which proves that there is no treatment with guidelines, because at the age of 6-7 the chewing teeth are extracted, which should be restored at that age and not removed, but because the main approach to treatment is general anesthesia. Early extraction takes place instead of filling [3].

The calculation of the DMFT index revealed its high value of DMFT=5.01, which was distributed according to age groups as follows:

- 3-6 years-4.5 middle
- 7-12 years-5.4 high
- 13-18 years-5.5 high

Overall, caries was detected in 55% of the examined contingent, distributed according to age groups as follows: 3-6 years - 42%, 7-12 years - 63%, 13-18 years - 67%.

Plaque index was examined in the study contingent. Plaque was not detected in 104 individuals. The rate of plaque detection was observed in 76 patients. 1 point was evaluated with 19 individuals, where thin plaque covered the gingival margin, with 2 points – 36 individual, where moderate plaque was noted, the interdental space was free, and with 3 points - 18 patients, abundant plaque was revealed, the interdental space was full of plaque [4].

During the study, the state of oral hygiene was also assessed. 103 recruited patients had good oral hygiene, good hygiene was detected in 19 patients, unsatisfactory hygiene was detected in 43 children, and poor oral hygiene was detected in 14 children.

Concomitant diseases identified in the study group

An in-depth interview of the respondents' parents/guardians was conducted using the questionnaire as a research support tool. As a result, information on concomitant diseases of recruited children was obtained. 11.8% (67 cases) of the respondents of the full study group had various chronic diseases or conditions, including an allergic reaction in 17.7% of cases. It should be noted that in 7.9% of the people with allergic backgrounds, various food allergies were detected, in other cases (6.7%) there was a plant allergy and in 3% of cases there was a drug allergy. Convulsions, epileptic seizures, mental disorder, hypocalcemia, hemangioma [5,6].

Those who had concomitant disease had caries in 89.0 percent of respondents, and those who did not have concomitant disease in 55.0 percent. $\chi^2=11.4$ and $P=0.001$, which means that statistically there is a correlation between concomitant disease and caries development. $P=0.001$ and Cramers=0.263, which means that there is a reliable low correlation between concomitant disease and caries development. The chance of developing caries in the case of concomitant disease is 1.6, and in the absence of concomitant disease 0.2. OR=6.8, the risk factor for concomitant disease is statistically significant [7-9].

Conclusion

Children with autism exhibited higher caries prevalence, poor oral hygiene and high gingival index.

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Statement of Ethics

The research was conducted through a questionnaire approved by the Ethics Committee of the University of Georgia.

Conflict of Interest Statement

The authors have no conflict of interests to declare.

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Author Contributions

M.S and K.N share first authorship. M.S. designed, performed the experiment and wrote this paper. M.S performed statistical analyses, interpreted the data, and wrote this paper. K.N revised this paper. All of the authors approved the final version of this paper and are accountable for all aspects of this work.

Data Availability Statement

All data generated or analysed during this study are included in this article [and/or] its supplementary material files. Further enquiries can be directed to the corresponding author.

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