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EVALUATION OF ORAL HEALTH STATUS IN CHILDREN WITH AUTISM

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ABSTRACT:

Autism spectrum disorder is one of the most severe childhood neuropsychiatric conditions. Autistic individuals are characterized by impairment in social interaction with a restricted range of interests and repetitive behaviors. The population with autism spectrum disorders presents with similar health problems as that of the normal individuals, but due to factors like poor dietary preferences, behaviors and specific aversions, autistic patients are at a greater risk and are more susceptible to developing chronic non-communicable oral health conditions. The increasing prevalence of autism spectrum disorder has brought an interest in their oral health concerns, which coincides with one of the global oral health goals to promote oral health within this population. The aim of this study is to evaluate the oral health status in children with autism. Records of pediatric patients who reported to Saveetha Dental College and Hospitals from June 2019 to March 2020 were reviewed. 16 pedodontic patients who had autism were included in this study. Clinical examination, dental status and photographs of these patients were evaluated. The oral health status of autistic children were evaluated using DMFT and OHIS index. The data was entered in IBM SPSS 20.0 software and analyzed using Chi square test. From the results of this study, it was observed that OHI score of 1 or less (69%) and DMFT score of 2 or below (63%) was most prevalent among the study population of autistic children. Higher

DMFT and OHI score was more commonly observed in 11 to 15 years of age and males showed more prevalence of poor oral health than females. Within the limitations of the current study, it can be concluded that children with autism exhibited poor oral health status.

INTRODUCTION

Autism, first described by child psychiatrist Leo Kanner in 1943, is a neurodevelopmental disorder characterized by problems in social interactions, difficulty in communication, limited and repetitive behaviors.¹ Affected children may be incapable of cooperating in the dental setting, reducing their access to dental care.^{2,3}

It has been reported that the most frequently seen oral problems in children with autism are gum diseases, bruxism, self-inflicted injury, dry mouth, non nutritive chewing, and tongue thrusting.^{4,5,6} In addition, it has been reported that such individuals also had malocclusions such as high-arched palate and anterior open bite.^{7,8,9}

The population with autism spectrum disorders presents with similar health problems as that of the typical population, but due to factors including poor dietary preferences; behaviors and specific aversions, this population is at a greater risk and more susceptible to developing chronic non-communicable oral health conditions.^{10,11} Individuals with special needs may have great limitations in oral hygiene performance due to their potential motor, sensory, and intellectual disabilities.^{12,13}

Children with autism spectrum disorders (ASD) are often cited as having certain food preferences, which includes sweets and soft foods¹⁴. Additionally manual dexterity required for adequate tooth brushing is often reduced in children with ASD, resulting in inadequate tooth brushing. Dental care access and oral care delivery has proved to be very problematic for children with ASD.¹⁵ Financial costs, scarcity of medical aid coverage and the child's indifference towards dental procedures has been acknowledged as the core liabilities to oral care delivery for this population¹⁶.

As years passed, the incidence of autism has increased substantially. A recent report stated that one out of every 68 children at the age of eight have autism.¹⁷ This suggests that the possibility of dentists encountering children with autism during their careers is rather high.^{18,19} Therefore, to develop dental approaches more suitable for individuals with autism spectrum disorder (ASD), more light should be shed on this matter and awareness should be raised. Thus this study is conducted to evaluate the oral health status in children with autism.

MATERIALS AND METHODS

The present study was undertaken after receiving approval from the institutional review board. The ethical approval number for the present study is SDC/SIHEC/2020/DIASDATA/0619-0320. Data was retrospectively collected from the case records of patients who visited the Department of Pediatric and Preventive Dentistry at Saveetha Dental College Chennai from

June 2019 to March 2020. Patients who had autism and were below 18 years were included in the study. Patients older than 18 years and those with any other disorder were excluded from the study. 16 patients who fulfilled the inclusion and exclusion criteria were included in the study. Clinical examination, dental status and photographs of these patients were evaluated. DMFT and OHIS index were calculated to estimate the oral health status of these children. Cross verification of data for error was done by presence of additional reviewer and by photographic evaluation. Simple random sampling was done to minimize sampling bias. This study was generalized to the south Indian population. The data was entered in excel manually and imported to IBM SPSS 20.0 software for analysis. Descriptive and inferential statistics was used. Descriptive statistics included frequency of distribution of age, gender and its association with OHI and DMFT and inferential statistics includes Chi-square test. The level of significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

Out of 16 children with autism, OHI score of 1 or less was present in 69% and DMFT score of 2 or below was present in 63%. Higher DMFT and OHIS score was commonly observed in 11 to 15 years of age and males showed more prevalence than females.

50% of the autistic children in the study belonged to the age group of 11 to 15 years. 63% children showed a DMFT score of 2 and below. DMFT scores of 3 to 5 and 6 to 8 were observed in 25% and 12% of the population respectively. Higher DMFT scores were observed in 11 to 15 years of age (figure1). P value was 0.525 in Chi square test. This shows that the difference between DMFT scores of autistic children in different age groups is statistically not significant ($P > 0.05$). OHI score of 1 was observed in 69% of the children. OHI score of 2 and below were observed in 31% of the children. Age group of 11 to 15 years showed the highest OHIS score (figure2). P value was 0.031 and this shows that the difference between OHI scores of autistic children in different age groups is statistically significant ($P < 0.05$). 60% of males had a DMFT score of 2. DMFT scores of 3 to 5 and 6 to 8 were present more in males, 40% each. DMFT score of 6 and above was not present in females. 67% of females had DMFT scores of 2 while the rest 33% had scores between 3 to 5 (figure3). P value was 0.474 which shows that the difference between DMFT scores of autistic children among males and females is statistically not significant ($P > 0.05$). In males, OHI score of 1 was seen in 50%, score of 2 and below in 40% and score of above 2 was observed in 10%. Only OHI score of 1 or less was present in females (figure4). P value was 0.013 which shows that there is a statistically significant ($P < 0.05$) difference between OHI scores of autistic children among males and females.

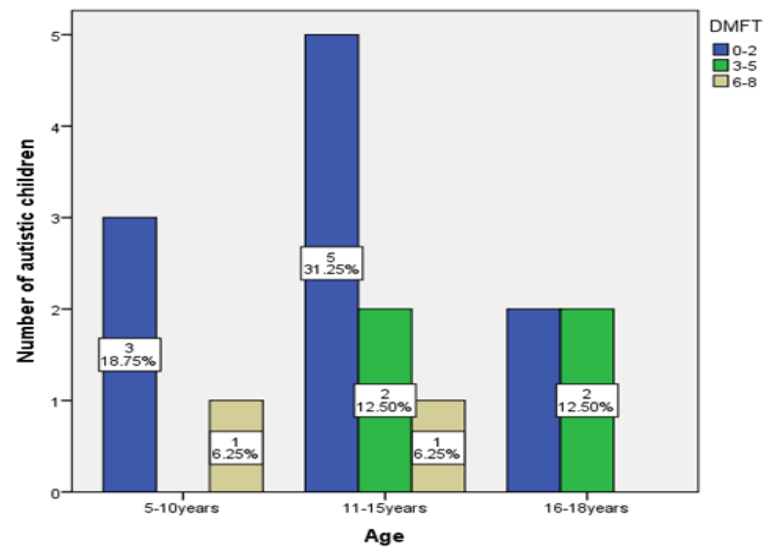


Figure1: Bar graph depicts the association between age and DMFT score in the study population of autistic children. X axis denotes age and Y axis denotes the number of autistic children along with DMFT score. Higher DMFT scores was observed in the age group of 11-15 years. Chi square test was done and association between DMFT scores of autistic children in different age groups was statistically not significant. (Pearson's Chi square value= 3.20, df=4, p value=0.525 (>0.05)).

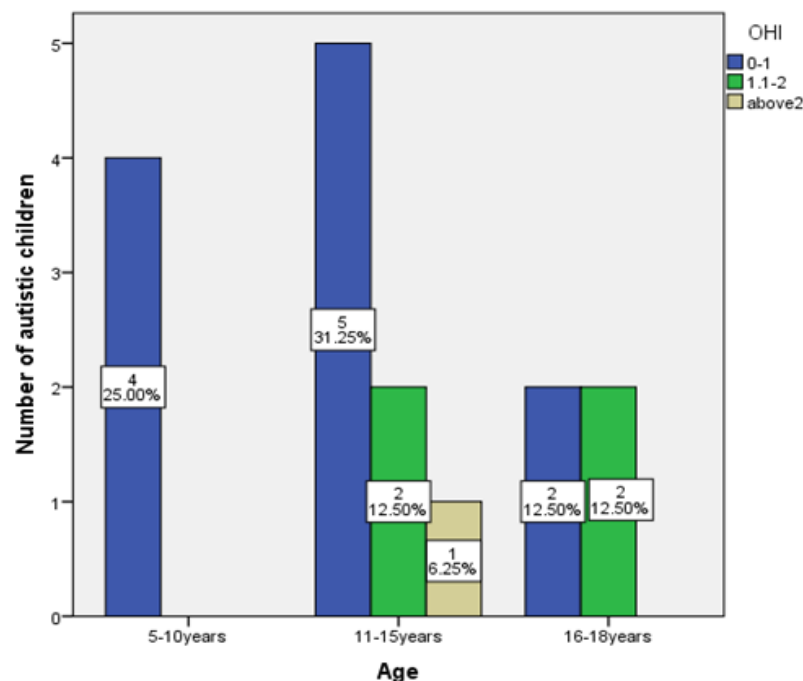


Figure2: Bar graph depicts the association between age and OHI score in the study population of autistic children. X axis denotes age and Y axis denotes the number of autistic children along with OHI score. Higher OHI scores was observed in the age group of 11-15 years. Chi square test was done and found an association between OHI scores of autistic children in different age groups

which was statistically significant. (Pearson's Chi square value= 3.81, df=4, p value=0.031 (<0.05))

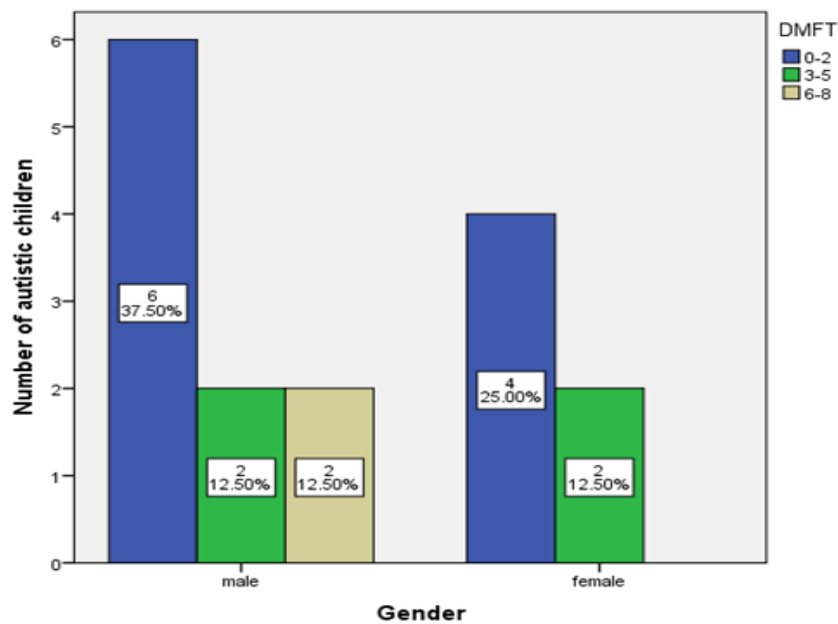


Figure3: Bar graph depicts the association between gender and DMFT score in the study population of autistic children. X axis denotes gender and Y axis denotes the number of autistic children along with DMFT score. Higher DMFT scores were present in males compared to females. Chi square test was done and association between DMFT scores among male and female autistic children was found to be statistically not significant. (Pearson's Chi square value= 1.493, df=2, p value=0.474 (>0.05)).

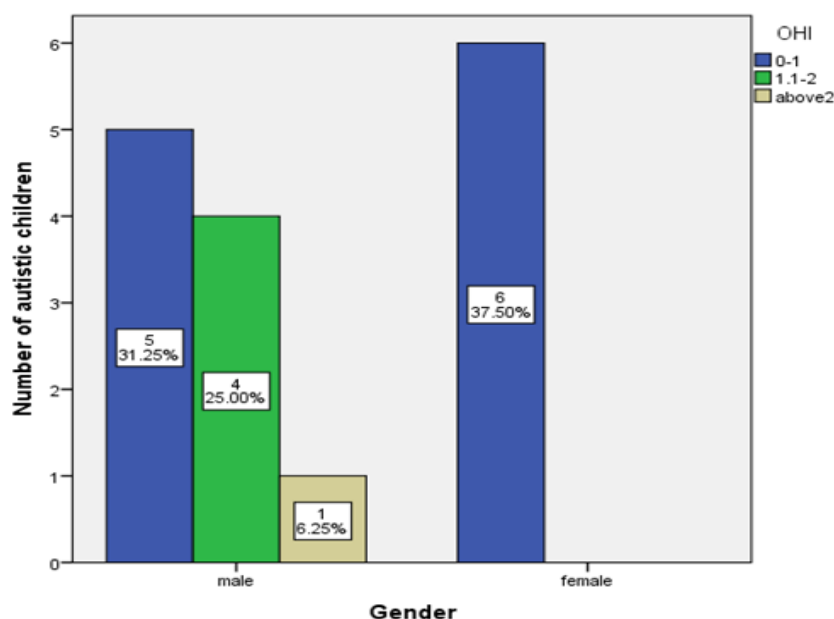


Figure4: Bar graph depicts the association between gender and OHI score in the study population of autistic children. X axis denotes gender and Y axis denotes the number of autistic children along with OHI score. Chi square test was done and association between OHI scores among male and female autistic children was found to be statistically significant. (Pearson's Chi square value= 4.36, df=2, p value=0.013 (<0.05))

Similar to the present study, Maweri SA et al²⁰ observed the mean scores of DMFT was 2.00 ± 2.18 . Also, in a study conducted by Kalyoncu et al, the mean DMFT values of the children with ASD was 2 ± 2.26 ²¹. The overall mean for DMFT score was 2.4 in a study by Jaber et al⁶. Tulumbaci et al, in their study reported that, the DMFT values in their study was 3.59 ± 3.60 , which is higher than the values of the present study²². The mean dmft was significantly higher in children with autism than in controls. This finding is consistent with many earlier reports.^{23,24} However, this result differs from that of Nam et al,²⁵ who found that children with autism had lower dmft than controls, and from that of DeMattei et al.,²⁶ who found no differences in dental caries between the autistics and controls. A high caries index among the children with autism could be attributed to their poor oral hygiene and excessive consumption of sweets.²⁷ Also, poor oral health and periodontal problems could be related to irregular brushing habits resulting from the difficulties encountered by trainers and parents while brushing these children's teeth.^{22,28,29}

Mean OHI score observed was 1 in the present study, which was similar to Orellana LM et al⁷ study which observed a score of 1.30 ± 0.58 . In this study, children with autism showed increased OHI score which was in agreement with several previous reports.^{4,6,24,30} In a study done by Subramanian et al in Indian population, they observed that DMFT scores were less but the OHI score was more in autistic children.³¹ This can be explained by the fact that autistic patients cannot brush as effectively as their normal counterparts. In a

similar study by Luppapornlap et al.,³² they stated that poor hand coordination leads to difficulty in maintaining good oral hygiene in children with autism, thus increasing the incidence of gingival diseases. Various eating problems such as being choosy about food, keeping food in the mouth, and rejecting food are frequently seen in children with ASD.^{33,34} Another possible explanation for the presence of generalized gingivitis might be the side effects of medications which are used to control the manifestations of autism, such as psychoactive drugs or anticonvulsants, with the most common drug classes being antidepressants, stimulants, and antipsychotics.³⁵

DMFT and OHI score was found to be more in males than females. Previous studies reported similar higher prevalence among males^{6,23,24} Baron-Cohen et al.³⁶ attributed this to the high level of fetal testosterone which can potentially affect the genes and chromosomes.

It was also observed that the DMFT and OHI score increased with age, with the age group of 11-15 years showing more prevalent scores. This finding is justified by some authors like Blomqvist et al and Delli et al in their study.^{37,38} This may be due to the increase in the number of permanent teeth and increasingly difficult faced by family members in helping these children in brushing teeth with increasing age.³⁹

It is vital to improve oral conditions in these patients either by the application of preventive dentistry, or even analysis of the susceptibility to oral diseases.⁴⁰ This way, the number of invasive dental interventions will tend to decrease, improving the quality of life of these patients⁴¹.

This research could pave way for more studies to be done on the oral health of autistic children in order to create awareness among dentists and caretakers about autism and introduce new treatment modalities to improve oral health in these children. The pros of the study is flexibility, easy of data collection and limitations of this study includes limited demographics and limited sample size.

CONCLUSION

Within the limitations of the study it can be concluded that children with autism exhibited poor oral health status. Male autistic children in the age group of 11-15 years showed higher prevalence of dental caries and poor oral hygiene.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interests.

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