



Risk Factors for Traumatic Injuries in Children with Autism

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ABSTRACT

Autism is a lifetime developmental disability. Autism affects individuals from different ethnic backgrounds and social classes. Traumatic dental injuries are very common among children in India. TDI is most common among pre-adolescent and adolescent age groups. 16 patients were taken up in the study. Data was collected by reviewing the case sheets of patients with autism disorder from June 2019-April 2020. Data was tabulated and statistical analysis was done in SPSS version 19 using chi square test. It was found that 31.25% of the boys were affected with trauma in the study. Fall (80%) was the most common risk factor associated with trauma. Maxillary central incisors (37.5%) were the commonly fractured teeth. The results were statistically significant, since the p value was <0.05. Within the limits of the study it was found that children with ASD exhibit risk factors of fall to be the most common when compared to those without ASD. Prevalence of TDI was more in boys than girls.

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INTRODUCTION


Autism spectrum disorders are a group of disorders that are characterised by severe impairment in the process of socialisation, communication and learning, presenting repetitive and solitary activities. Recent estimated prevalence of ASD in India ranges from 0.15% to 1.01% in various studies.

Traumatic dental injuries (TDI) is one of the most common problems faced by children and adolescents. TDI can affect people's lives in various ways. It affects aesthetics, speech, function, tooth position of causing aesthetic, functional and physiological problems. In children with special needs, including autism, TDI causes a major

problem as these children often find it difficult to cooperate with the dentist in the clinic [1]. The prevalence of TDI in the normal population ranges from 4% to 30% [2].

It has been described that autistic children have poor oral health and higher incidence of dental caries and malocclusion [3]. Few studies have described the prevalence of TDI in individuals with various disabilities. In children with cerebral palsy, the prevalence varies from 20% to 57% [4,5] and those with special needs had a prevalence of 9.2% [6]. It has been described that TDI is prevalent similarly in autistic children [7]. This has been due to the behavioural disturbance in these children

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such as self injury and aggression, stereotyped and repetitive patterns [8].

Until recently, most scientists believed that autism results due to genetic factors. But recent studies indicate that environmental problems may also play a significant role in the development of autism. Although the role of environmental factors is still poorly categorised.

Previously, our team had conducted research and clinical trials over the past 5 years [9–24]. Now we are focussing on epidemiological surveys. The idea for this survey stemmed from the current interest in the community.

This study is conducted to assess whether the aetiology for dental trauma in children and adolescents with and without ASD is similar so that preventive measures can be taken to minimise trauma among these individuals. The aim of this study is to assess the risk factors for traumatic dental injury in autistic children.

MATERIALS AND METHODS

This study was conducted in Saveetha Dental College, Chennai. The study was conducted in patients who visited the hospital from June 2019 to April 2020. The ethical clearance was given by Saveetha Research Board (SRB). A total of 16 patients were taken into the study in the age group of 6-18 years, out of which 10 were boys and 6 girls. The data was obtained by reviewing case sheets of each patient with autism visiting Saveetha Dental College. The trauma was classified according to Ellis fracture affecting enamel only (I), enamel and dentin (II), non-vital tooth (IV). The data was tabulated in Excel and analysed. Data was imported to SPSS version 19 and chi-square test was used to obtain the results. The significance level was set at 0.05.

RESULTS AND DISCUSSION

Of the total 16 participants, it was found that no females were affected with trauma, and 31.25% of the males in the population in the study were affected. (Figure 1) It was found in the maxillary central incisor mostly affected. (Figure 2) The prevalence of one of the central incisors or the incisor and lateral or the lower incisor alone was comparatively much lesser. Fall was found to be the most common cause of fracture (80%). The other cause for fracture that was most common was RTA. (Figure 3)

In the study, no female children were affected by trauma and 5 out of 10 boys with autism had a history of trauma. The permanent maxillary central incisors are more commonly affected (12.5%) followed by the lower anterior and upper lateral incisor. The most common risk factor was found to be fall (80%) followed by RTA (20%). These were

the only two risk factors that were present in this study.

Programs that aim to reduce TDI and to identify the predisposing factors are well described in the literature [25]. However studies pertaining to the same in autistic children is very scarce. Identifying the respecters in such a group will be helpful to reduce the impact on such children as they present with abnormal sensory processing, self injury, impaired cognitive ability and social functioning [8].

A study conducted by Habibe et al showed that the trauma resulted while performing routine activities (20.8%). Fall and self harm (12.5%) were found to be the most common cause of TDI [1]. The results of this study coincides with the results of the present study. Fall was associated with lack of stability during walking.

In studies evaluating special needs, fall was identified as the main cause which also coincides with children without any disability [25,26]. In a study conducted by Altun et al, it was observed that TDI was present in 23% of children with ASD [27]. In the present study, TDI was present in 37.5% of the children.

A recent study done by Du et al showed that the TDI to anterior teeth had a higher percentage which coincides with our study [28]. In the present study, males are more commonly affected than females which coincide with the studies done on the normal population [28,29].

The results of a study done by Habibe et al and Altun et al, showed that girls with ASD experienced more TDI than boys, which is not in accordance with the present study [1,30]. It has been studied that the trauma occurs most commonly in the pre-adolescent period in a study reported by Zenign e al [31].

Permanent maxillary central incisors were the teeth most commonly affected by TDI, a study done by Altun et al, which is similar to the present study [27]. Fractures involving only the normal were the most common finding followed by enamel with dentin fractures without pulp exposure in most studies. [32].

CONCLUSION

Within the limits of the study it was found that children with ASD exhibit risk factors of fall to be the most common when compared to those without ASD. Prevalence of TDI was more in boys than girls. Creating awareness among parents with children of ASD for the prevention of TDI. Thus, management of these patients becomes easier due to their inability to cooperate.

AUTHOR CONTRIBUTIONS

Keerthana Baskar, carried out the retrospective study, planning the study design, collection and

analysis of data and drafted the manuscript. Dr. Aravind Kumr and Dr. Sreedevi aided in conception of the topic, supervision and appraisal of the manuscript.

CONFLICT OF INTEREST

There was no conflict of interest.

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Self

Ethical Clearance

It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number-SDC/SIHEC/2020/DIASDATA/0619-0320)

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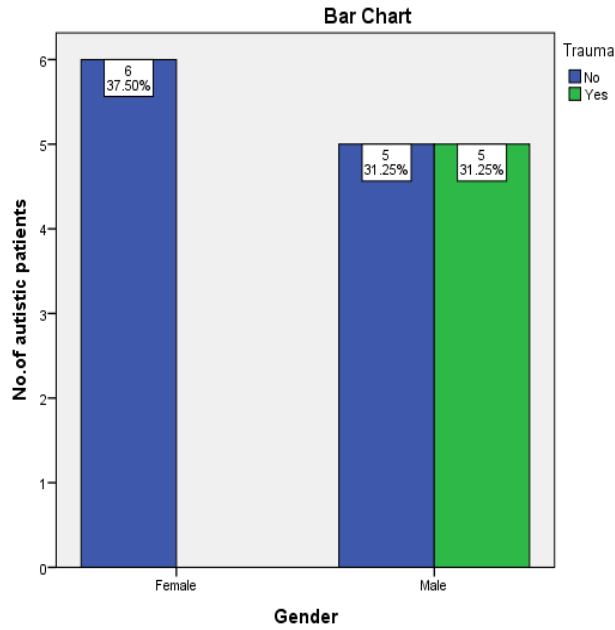


Figure 1: The above depicted graph shows association between gender and trauma . The X- axis denotes gender and Y-axis denotes number of patients. Green denotes presence of trauma and blue represents absence of trauma Trauma was prevalent amongst males (31.25%, green) and there was a significant statistical difference between the groups(p value : 0.037) Chi square test was done. Pearson’s Chi Square value: 4.364, DF: 1, p value: 0.037 (<0.05).

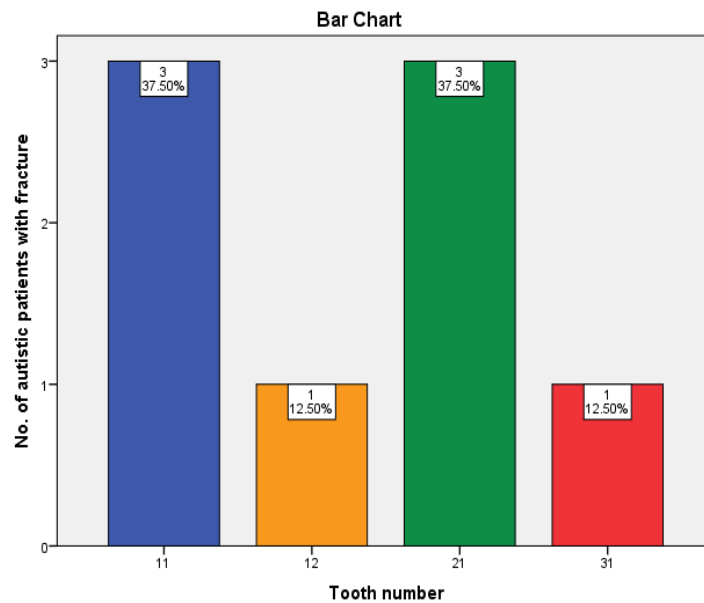


Figure 2: The above depicted graph shows frequency of tooth affected by trauma in autistic patients. The X- axis denotes tooth number and Y-axis denotes number of autistic patients with trauma. Permanent maxillary central incisors, 11 (blue) and 21 (green) were the most commonly fractured teeth (37.50% each) whereas only 1 permanent right lateral incisor(12.50%) and one left mandibular central incisor(12.50%) was affected .

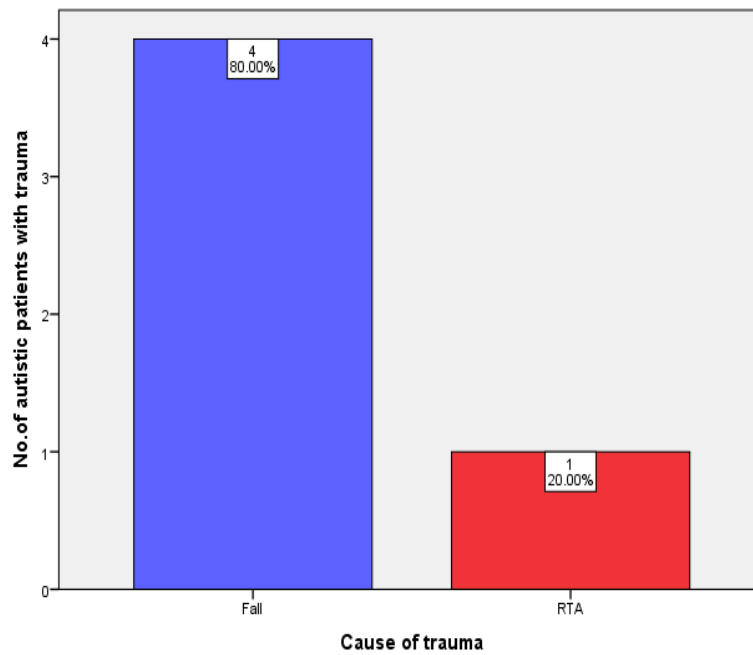


Figure 3: The above depicted graph shows frequency distribution of the cause of trauma . The X- axis denotes cause of trauma and Y-axis denotes number of autistic patients with trauma. Fall was the most common (80%) cause of trauma among autistic children (blue) followed by road traffic accidents(20%)