

# To Measure the Anxiety of the Child with Autism using A Parent Rated Child and Adolescent Symptom Inventory (CASI) Anxiety Scale and to Evaluate Its Relationship with IQ: A Research

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## ABSTRACT

**Introduction:** Autism spectrum disorder is defined by diagnostic criteria that include deficits in social communication and social interaction and restricted, repetitive patterns of behavior, interests, or activities. Henceforth in the present study IQ and anxiety of the child were recorded using Seguin Form board test of intelligence and Child and Adolescent Symptom Inventory (CASI) anxiety scale, in order to assess their anxiety level and ability to cooperate during dental treatment to these children.

**Material and Methods:** 50 participants with autism took part in the study after due consent of their parents (38 boys, 12 girls; age 4-16 years). We examined the distribution, calculated the factor analysis and compared the correlations of the parent-rated 20-item CASI Anxiety scale with the IQ of the child.

**Results:** Chi-Square test for comparison of anxiety with IQ of child showed that more the IQ of the child more is the anxiety and the results were statistically significant ( $p=0.004$ ).

**Conclusion:** Children with autism, having high IQ scores were seen to be more anxious and showed more restlessness and tensed behavior as compared to children with lower IQ values. Henceforth necessary changes should be made to accommodate their greater need in behavior management techniques in the dental operatory.

**Keywords:** Autism, Child and Adolescent Symptom Inventory.

is facing with a rising population that includes those with autism. Therefore, it is important that dental clinicians have an understanding of the variety of clinical characteristics those children with an ASD present with, and issues they might encounter when treating such a patient. Henceforth in the present study IQ and anxiety of the child were recorded using Seguin Form board test of intelligence and Child and Adolescent Symptom Inventory (CASI) anxiety scale, in order to assess their anxiety level and ability to cooperate during dental treatment to these children.

## MATERIAL AND METHODS

This study received the support and collaboration by an NGO, SWEEKAR, Academy of Rehabilitation Sciences, Secunderabad, India and words fail to express my heartfelt and sincere thanks to all the parents and children who were a part of this study. The rationale of this study was to assess the anxiety by using Child and Adolescent Symptom Inventory (CASI Anxiety) in children with autism and its correlation with IQ of the child. Prior permission was obtained from various special schools catering to the needs of children with autism for conducting a dental awareness camp for teachers and parents/caretakers of children with autism. After necessary ethical clearance from the Ethical Committee of Army College of Dental Sciences, Secunderabad the study was undertaken. An orientation programme for parents/caretakers explaining the objectives of the study was put forward with the help of a power point presentation. Therefore each parent/caretaker and teacher was asked to give affirmation

## INTRODUCTION

Autism is a neurodevelopmental disorder of infancy. Earliest description of autism has been documented by Leo Kanner in 1943. The affected child shows impairment in three major domains; social interaction, communication and repetitive behavior.<sup>1</sup> The existing statistics for a range of childhood psychopathologies also suggests that comorbid conditions such as anxiety disorder, intellectual disabilities etc. exist in children and adolescent with autism pertaining to about 30-40% of children with autism spectrum disorders (ASDs). Due to the cognitive and language deficits in this population, measuring anxiety symptoms is particularly demanding. A consistent and suitable measure of anxiety in children with ASDs, that is responsive to change with treatment, is imperative for use in pharmacological and psychosocial intervention studies.<sup>1</sup> In 2013 worldwide, autism is estimated to affect 21.7 million people.<sup>2</sup> Moreover Global Burden of Disease report on mental and neurological disorders, the organization highlighted the critical plight the world

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via a written consent form to participate in the study. A total of 50 participants in the age group of 4-16yrs with autism were selected for the study after their parents/ caretakers written consent. Both male and female children who were a part of an institute for at least 2 years were selected. To assess the anxiety of the child for cooperation during dental appointments, the parents were asked to fill a questionnaire with 20 questions. The anxiety was quantified using Child and Adolescent Symptom Inventory (CASI) Anxiety scale. IQ or developmental quotient (DQ) of the child was recorded using Seguin Form board test of intelligence.<sup>1,2</sup>

## RESULTS

The result showed that more the IQ of the child more was the anxiety and the results were statistically significant ( $p=0.004$ ). Factor analysis ranged from 0.575 to 0.876 and it was found that restless and tensed behavior were more significant in influencing the anxiety with factor loading value 0.861 and 0.876 respectively. Frequency distribution and percentage of different types of IQ in the selected population was performed and the results showed 34% of children with severe retardation.

## DISCUSSION

It was seen that 34% of children were with severe retardation, IQ ranging from 20-35 and only 12% were in high functioning group with IQ > 70 (Table 1). These findings are in accordance to study by Klein U et al. in 1998 which stated that an IQ higher than 50 may be expected in 60% of children, 20% may range between 50-70 and 20% in less than 70 IQ range.<sup>6</sup>

Anxiety disorders are one of the most prevalent childhood psychiatric disorders in typically developing children, affecting 10% of elementary aged children. Children with autism spectrum disorder (ASD) are at a heightened risk for developing anxiety disorders (Craske & Zucker, 2002) and it is furthermore observed that 30% to 84% of ASD children also have a co-occurring anxiety disorder.<sup>7</sup> Identification of anxiety symptoms are very critical as additional accommodation in the behaviour management techniques can be included, thereby rendering better dental care to these children. The results showed that more than 50% of the study population had anxiety with scores ranging from 13-31 on CASI scale (Table 3), which was much higher than that reported in the review by Klingberg (9%).<sup>8</sup> A study by Charles JM in 2010 supports our finding and states that frequently seen unusual responses to a new stimuli may cause significant anxiety resulting in meltdowns and tantrums.<sup>9</sup> A meta-analysis study states that there is considerable evidence in the literature stating that children and adolescents with autism spectrum disorders (ASD) are at increased risk of anxiety and associated disorders.<sup>10</sup>

This may be explained by characteristics of this population such as: intellectual disability, impairment in communication, non-functional routines and sensory sensitivity that make a dental visit frightening and uncomfortable for them. Henceforth an understanding of anxiety in children and

adolescents with ASD is necessary for case conceptualization, precise assessment, and treatment planning.<sup>11</sup> Factor analysis was done for various anxiety related questions and it showed that restless and tensed behaviour were the most significant behaviors recognized for influencing the anxiety of the child in comparison to other behaviors with factor loading value 0.861 and 0.876 respectively (Table 2). On comparing anxiety with IQ of the child it was seen that more the IQ of the child more was the anxiety and the results were statistically significant ( $p=0.004$ ). Studies by Sukhodolsky et al., Weistbrot et al. and Mazurek et al. with a large sample size, reported more parent-rated anxiety symptoms in higher-functioning children, IQ > 70 with ASDs compared to children with IQ below 70.<sup>12,13,14</sup>

Gadow and colleagues found that children with higher IQs ( $\geq 70$ ) were rated as having greater psychiatric symptom severity. They used Child Symptom Inventory-4 (CSI-4; Gadow & Sprafkin, 2002), parent- and teacher-report measures, to assess the co-occurrence of *DSM-IV* psychiatric symptom clusters in a large sample of children with ASD ( $n=301$ ).<sup>15</sup> In contrast, according to the meta-analysis done by van Steen et al. (2011), anxiety disorders were found to be more common in participants with lower IQ scores in ASD subtypes. There are studies which reported that a lower mean IQ was associated with higher prevalence rates of anxiety in general and social anxiety disorder. Various studies reported higher mean IQ was coupled with higher frequency rates of obsessive-compulsive disorder and separation anxiety disorder.<sup>10</sup>

These contradictory findings in the literature regarding anxiety and IQ scores may be attributed to the use of different anxiety scales and also the differences due to the challenges of assessing anxiety in children with low IQ, and consequential false positives or false negatives results. A previous study by Sukhodolsky et al. (2008) acknowledged anxiety symptoms in a sample of 5-17 year-olds with ASDs.<sup>12</sup> This study used a parent reported 20-parameter anxiety scale of the Child and Adolescent Symptom Inventory (CASI) having good internal consistency across IQ. They observed a low correlation between anxiety and measures of irritability, hyperactivity and adaptive behaviour. Finally, it concluded that higher levels of anxiety were associated with high functional language, higher IQ and higher levels of stereotyped behaviour. In this regard, it may be stated that special accommodations need to be done to reduce potential anxiety provoking factors in the dental operatory.

## CONCLUSION

Higher anxiety scores in children and adolescents with autism spectrum disorders (ASD) explain that they are at increased risk of anxiety and associated disorders. Restless and tensed behaviour were more significant in influencing the anxiety which affects the behavior of the child in the dental clinic. In the selected population 34% of children were with severe retardation and only 12% were in the high functioning group with IQ >70.

Children with autism, having high IQ scores were seen to

be more anxious and showed more restlessness and tensed behaviour as compared to children with lower IQ values. Moreover parent rated 20- item CASI Anxiety scale is a preparatory level for measuring anxiety in children with ASDs. Further research is desirable to substantiate its sensitivity.

Why this paper is important for pediatric dentists:

- Anxiety and dental fear play a crucial role in treatment planning in pediatric patients.
- The IQ of children with autism affects their anxiety and makes their dental treatment complicated.
- Understanding the dental needs of the children with Autism and knowing the link between their dental and medical conditions is very important so that these children do not fall a victim of dental emergency.

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