

A Study to Analyse the Prevalence Rate of Autism Spectrum Disorder Among Indian Children at a Tertiary Care Hospital

Dhengle Balasaheb Dagdu¹, Shailesh Sharma^{2*}

¹Associate Professor, Department of General Medicine, Meenakshi Medical College Hospital and Research Institute, Kanchipuram, Tamilnadu, India.

²Associate Professor, Department of Paediatrics, Meenakshi Medical College Hospital and Research Institute, Kanchipuram, Tamilnadu, India.

ABSTRACT

Introduction: Autism spectrum disorder is a developmental disability that has been proved to be of public importance. It affects not only the child and the family. It also has direct and indirect cost implications on the nation that are incurred in providing health care, support for education, and rehabilitative services. Therefore, this study was designed to analyse the prevalence of ASD in Indian children in the age range of 1-10 years of age.

Materials and Methods: This study was designed to be a population-based, cross-sectional study and mostly covered the entire eligible population (children aged 1-10 years of age) of the selected areas available for participation on the day of survey and analysis.

Results: Twenty -seven of them were from the rural area, seven were from the tribal area, and five were from the urban area. The clinical evaluation iterated that a total of 13 children as cases of ASD, giving us an overall prevalence of 0.9/1000. Out of these 13, five children belonged to the urban area, six belonged to the rural area, and three children belonged to the tribal area. The sociodemographic details of the diagnosed cases.

Conclusion: This result thus can construct the basis of future large-scale epidemiological and further genetic, environmental related research on autism in India. Such research in low-resource settings is important to procure the policies and to guide appropriate allocation of resources for individuals on the spectrum of disorder.

Keywords: Autism, Children, Prevalence, Economic Burden.


*Correspondence to:

Dr. Shailesh Sharma,
Associate Professor, Department of Paediatrics,
Meenakshi Medical College Hospital and Research Institute,
Kanchipuram, Tamilnadu, India.

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INTRODUCTION

Globally, Autism Spectrum Disorder (ASD) is observed to be an important aetiological factor which is responsible for the developmental disability. The estimated prevalence that has been reported to be about 1% in country like United Kingdom and 1.5% in the United States.^{1,2} There have been many epidemiological surveys that were conducted to determine the prevalence which estimates the occurrence of ASD during the past ten years. The data that were extracted based on these surveys revealed that an increase in the prevalence of ASD worldwide. The prevalence was estimated to be 61.9/10,000 as per the cases reported in the year 2012.³

Researches that were conducted globally in various countries are suggesting that more children are being diagnosed with autism than ever been reported in the past.⁴ Earlier studies been performed across the world have quantified an increase between 50% to over 2,000% in the cases reported with autism.⁵ Therefore, there are no specific community-based studies that had been conducted so far on the prevalence or incidence of autism or ASD

in India.⁶ India is a country where the population have been estimated to be about nearly 1.3 billion people with children ≤ 15 years comprising nearly one-third of the total population. It has been estimated that more than 2 million people might be affected with the signs of ASD in India.⁷ Most of the documented studies on ASD are totally based upon hospital-based data and thus lack they lack information on the prevalence which actually estimates of this disorder reported in India.⁸⁻¹⁰ Additionally, lack of uniform application of fully validated and translated autism diagnostic tools makes it cumbersome to validate the exact prevalence of ASD.¹¹ There is also under-identification of the disorder because of a delay in the diagnosis of ASD at a young age.¹² ASD not only affects the child and the family but also has direct and indirect cost implications on the nation as most of its resources have to be utilized in providing health care, education support and rehabilitative services for these children.¹² Therefore, this study was designed to analyse the prevalence of ASD in Indian children in the age range of 1-10 years of age.

MATERIALS AND METHODOLOGY

This study is designed to be a population-based, cross-sectional study and mostly covered the entire eligible population (children aged 1-10 years of age) of the selected areas available for participation on the day of survey and analysis. But certain children with a history of hearing impairment were basically excluded from the study. No secondary visit was performed and only de facto population that is the population at the time of the study day was effectively studied. All the houses from the selected areas were surveyed by a house-to-house survey to screen children observed with autism. The research was basically carried out in two phases basically a screening phase and an evaluation phase. The Indian Scale for Assessment of Autism (ISAA) has

developed and validated by the National Institute of Mentally Handicapped (NIMH), Ministry of Social Justice and Empowerment, Government of India, for diagnosing and measuring the severity of autism in 2009. This scale is based on childhood-autism rating scale (CARS) and has 40 items divided under six domains – social relationship and reciprocity; emotional responsiveness; speech, language, and communication; behavior patterns; sensory aspects; and cognitive component. The items are rated from 1 to 5 with an increased score indicating increased severity of the problem. A score of 153 severe autism. The screening instrument was administered by investigators trained in the diagnosis of autism.

Table 1: Showing the number of participants in the study

Selected area	Number	Female (%)	Male (%)
Urban	4250	1895 (44.64)	2355 (55.36)
Rural	4775	2975 (62.3)	1800 (37.7)
Tribal	2075	929 (44.8)	1146 (55.2)
Total	11100	5799 (51.6)	5301 (47.8)

Table 2: Distribution of the study subjects according to the ISAA score in the population sample

Variable	Urban			Rural			Tribal		
	M	F	T	M	F	T	M	F	T
>70	4	1	5	12	15	27	3	4	7
Identified cases	4			6			3		
SES	Upper middle			Middle			Middle		
	Lower middle			Lower middle			Lower middle		

RESULTS

A total of 11,100 (children in the age group of 1-10 years) study participants were screened. The details of the demographic details of the sample population were studied and the details are being shown in Table 1. The table depicts that 53.64% and 44.71% of the studied population in the rural area belonged to the “middle class” and “lower middle class,” respectively, on SES scales. In the tribal area, a total of 94.88% of the population sample belonged to the “middle class” on SES. The sociodemographic profile of the urban population shows that 53.83% belonged to the “lower middle class” while 32.1% belonged to the “middle class.” The number of participants who were screened to be positive on the assessment tool (above 70) are displayed in Table 2. The total number of such participants was 39. Twenty-seven of them were from the rural area, seven were from the tribal area, and five were from the urban area. The clinical evaluation iterated that a total of 13 children as cases of ASD, giving us an overall prevalence of 0.9/1000. Out of these 13, five children belonged to the urban area, six belonged to the rural area, and three children belonged to the tribal area. The sociodemographic details of the diagnosed cases are also given in Table 2.

DISCUSSION

ASD is a clinically defined behavioural syndrome that actually manifests mostly in early childhood.¹³ The major signs and symptoms of ASD mostly comprised of abnormal or unreciprocated interpersonal and emotional interactions, disordered language and communication, repetitive and stereotypic behaviour.¹⁴ It is reported to be the condition possibly affecting almost all the populations globally. The global difficulties of autism is currently unknown but most of the studies that were conducted since the year 2000 in different geographical regions of the world displayed an estimated prevalence rate of about 17/10,000 for autistic disorder and 62/10,000 for all pervasive developmental disorders.¹⁵ The findings that were obtained from this study revealed that six out of the 10 (60%) autistic cases basically represented to the “lower middle class” on SES. There is no denying fact that socioeconomic status is one of the basic indicators of ASD that is correlated with our findings obtained.¹⁶ There is a strong and consistent association between socioeconomic conditions and mental illness.¹⁷ There is also enough available evidence that the relationship of SES with health varied occurs at every level of the

socioeconomic hierarchy.¹⁸ Low SES is often associated with an higher reported prevalence of autistic traits among the children screened 36 months after birth according to a Norwegian mother and child cohort study.¹⁹ Risk factors that were associated with the development of the condition like home delivery and birth asphyxia were also documented in many of the subjects on their assessment. It has been established that obstetric conditions, along with the prenatal and perinatal conditions, are reported to be related with an increased risk for autism and ASDs.²⁰ Delay in developmental milestones particularly motor and speech were actually reported by the Parents/caregivers Children with autism have been documented in many studies to have developed greatly lagging in gross motor and language development during the initial months of life.²¹ Studies conducted on autism in India has been largely minimised to hospital settings or in selective settings of autistic children and yet no results on the prevalence rate about the autism in India has been well documented.¹² A Study that had been conducted in Chandigarh, India revealed on the application of ISAA in the child guidance clinic.¹⁸ Based upon the authors, ISAA was observed to be easy to administer. In spite of noticing certain difficulties in scoring the items that were grouped under the emotional responsiveness category, the authors basically concluded that the scale is pretty much useful and feasible for the use in regular clinical scenario. The use of the scale has paved the way for acknowledging the longstanding concerns about the diagnosing and quantifying autism and to rate the related disability reported in the Indian population.¹⁴ The findings have also suggested that abnormal brain developmental processes early in the clinical signs and symptoms of autism. At present, research is being conducted to better evaluate the mechanisms behind these structural abnormalities and their longitudinal progression.¹⁴ Brain structural abnormalities need to be worked upon in detail to elucidate the true prevalence of autism.

CONCLUSION

These results thus can construct the basis of future large-scale epidemiological and further genetic, environmental related research on autism in India. Such research in low-resource settings is important to procure the policies and to guide appropriate allocation of resources for individuals on the spectrum of disorder.

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