

## STUDY OF PREVALENCE AND COMORBIDITY PATTERNS IN AUTISM SPECTRUM DISORDERS (ASD) AMONG CHILDREN WITH INTELLECTUAL DISABILITY

Shankar Kumar<sup>1</sup>, Kasthuri Pandiyan<sup>2</sup>, Chandrashekar Hongally<sup>3</sup>

<sup>1</sup>Lecturer, Department of Psychiatry, Bangalore Medical College and Research Institute, Bangalore.

<sup>2</sup>Associate Professor, Department of Psychiatry, Bangalore Medical College and Research Institute, Bangalore.

<sup>3</sup>Professor and HOD, Department of Psychiatry, Bangalore Medical College and Research Institute, Bangalore.

### ABSTRACT

No consensus has been reached yet on the co-occurrence of Intellectual Disability (ID) and Autism Spectrum Disorders (ASD) in young children. This study included 122 children with Mild/Moderate Intellectual Disability between 6 to 18 years, with 16.39% of them having comorbid ASD. IQ scores had no correlation with Autism severity scores. Seizure disorder was associated with 30% of the sample, all of whom had moderate autism while 45% had gastrointestinal problems. The behavioural problems had a high positive correlation with autism scores compared to IQ scores. Our findings support the use of the ISAA (Indian Scale for Assessment of Autism) as a new tool in ASD screening.

### KEYWORDS

Intellectual Disability, Autism Spectrum Disorder, Epilepsy, Problem Behaviour.

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### INTRODUCTION

Autism spectrum disorders (ASD) are characterised by persistent deficits in social communication and interactions with restricted patterns of behaviour, interests or activities.<sup>1</sup> The term has come to subsume Autistic disorder, Asperger syndrome and Pervasive Developmental Disorder not otherwise specified (PDD-NOS). Intellectual Disability (ID), according to the American Association of Intellectual and Developmental Disabilities (AAIDD), includes significant limitations (two standard deviations below average) in both intellectual functioning and adaptive behaviours, as measured by standardized assessments. The presence or absence of ID has been recognized as the strongest determinant of outcomes for individuals with ASD.<sup>2</sup> One in four individuals with ID is diagnosed with ASD.<sup>3-4</sup> Behavioural difficulties reported in autism may be related to core features, comorbid diagnoses or symptoms (e.g., aggression, disruption, hyperactivity, self-injury), or sensory abnormalities. Studies indicate comorbid medical conditions like seizures, immune system dysregulation, gastrointestinal symptoms, feeding difficulties (e.g., refusal, selectivity, sensitivity to textures), and sleep disruption occur in autism.

Estimated rates of ASD-ID comorbidity vary between 25 and 70 %<sup>5-14</sup>. Estimates of prevalence range from 1-2 per 1000, and about 1 in 250 in India<sup>15</sup> with reports of increasing incidence since the past few decades.<sup>16</sup> Intellectual disabilities among children with ASD initially thought to be as high as 75%, currently seems to be much lesser at 40 - 55%.<sup>17</sup> Prevalence of ASD in individuals diagnosed with intellectual disabilities is 19.8%.<sup>18</sup>

This preliminary study aims to assess the prevalence of ASD in the intellectually disabled, as well as the associated comorbidity patterns.

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*Corresponding Author:*

*Shankar Kumar,*

*Department of Psychiatry,*

*Bangalore Medical College and Research Institute,*

*Bangalore-2,*

*E-mail: shankarjs@gmail.com*

### AIMS AND OBJECTIVES

1. To assess the prevalence of ASD among children referred for assessment of Intellectual Disability (ID).
2. To assess the various behavioural & medical problems and its correlates in children with ASD and ID.

### METHODOLOGY

#### Setting and Design

The study was conducted at a university-affiliated department of Psychiatry in tertiary care General hospital catering to lower and middle SES. This was a cross-sectional study that commenced and was completed between August 2013 to November 2013.

#### Sample Selection

The sample comprised of 150 participants (68 females, 82 males) aged 6 to 18 years with mental subnormality referred to the MR clinic. IQ assessment was done using BKT/VSMS. 122 consecutive children qualifying with mild (50%) & moderate (75%) intellectual disability was screened for Autism Spectrum Disorders (ASD) using Social Communication Questionnaire (SCQ). SCQ is a 40-item standardized parent report tool to screen & assess persons with ASD based on three areas of functioning, with a cut-off of 15 indicating probable ASD. Subsequently, those subjects with ASD (SCQ >15) were also administered the ISAA (Indian Scale for Assessment of Autism) after informed consent from guardians.

Socio-demographic details including medical history which looked into perinatal events, developmental details, GI disturbances and seizures were collected using a semi-structured questionnaire. Behavioural problems were assessed using Behaviour Problems Inventory (BPI).

BPI was quantified based on the frequency of problem behaviours as indicated in the scale A-F being respectively taken as 0-5.

Disability as a result of ASD was calculated as per ISAA, a scale based on CARS having 40 items divided under six domains, each item being rated in increasing severity of 1 to 5. A score of <70 indicates no autism, 70-106 (mild autism), 107-153 (Moderate autism), and >153 (Severe autism).

**Instruments**

1. BinetKamat Test / Vineland Social Maturity Scale (BKT/VSMS)- for assessment of Intellectual disability.
2. Social Communication Questionnaire (SCQ) - for screening of ASD.
3. Behaviour Problems Inventory (BPI)- for assessment of behavioural problems.
4. Indian Scale For Assessment of Autism (ISAA) -for assessment of disability in ASD.

**RESULTS**

Prevalence of autism spectrum disorders in subjects with mild & moderate intellectually disability was 16.39%.

Variables	Mean (n=20)	SD
AGE	9.7	6.3
IQ Score	47.6	9.52
SCQ Score	21	4.12
ISAA Score	112.85	22.86
BPI Score	78.95	24.54

**Table 1: Mean (SD) scores on SCQ, ISAA and BPI for sample**

IQ - Intelligence Quotient, SCQ- Social Communication Questionnaire, ISAA - Indian Scale for Assessment of Autism, BPI- Behaviour Problem Inventory.

Medical Disorders	Number	Percentage
Seizures	6	30%
Down's Syndrome	2	10%

**Table 2: Medical comorbidities in sample**

GI Disturbances	Number	Percentage
Diarrhoea	5	25%
Constipation	2	10%
Both	2	10%
<b>Total</b>	<b>9</b>	<b>45%</b>

**Table 3: Gastrointestinal comorbidities in sample**

Normal Delivery	LSCS	Forceps
15	3	2

**Table 4: Mode of delivery**

Asphyxia	Preterm	Breech Presentation	Gestational DM
4	1	2	1

**Table 5: Adverse perinatal events**

Perinatal hypoxic events (n) = 4 (20%)

ISAA score	(-)0.12
SCQ score	(-)0.35
BPI Score	(-)0.19

**Table 6: Correlations with IQ scores**

ISAA Score & SCQ Score = 0.78\*\*\*

Social Relationship & Reciprocity	Emotional Responsiveness	Speech-Language Communication
0.869***	0.734***	0.37

**Table 7: Correlations of SCQ Score with ISAA Sub scores**

Behaviour Patterns	Sensory Aspects	Cognitive Component
0.30	0.14	0.15

	ISAA (Autism) Mild	ISAA (Autism) Moderate
Mean BPI Scores	51.00	87.22
SD	16.26	20.08
(n)	7	13
p-value	0.0049***	

**Table 8: Comparison of behavioural problems among mild and moderate autism groups**

	Mild Intellectual Disability	Moderate Intellectual Disability
Mean autism Score (ISAA)	102.83	117
SD	15.99	26.62
(n)	8	12
p-value	0.2658	

**Table 9: Comparison of autism scores among mild Vs moderate intellectual disability groups**

**DISCUSSION**

Prevalence of autism spectrum disorders in those referred for Intellectually Disability is 16.39% which is in concordance with existing literature.<sup>18</sup>

Seizure disorder was associated with 30% of our sample, all of whom had moderate autism according to ISAA, which is in accordance with previous studies which report an incidence of epilepsy in children with autism ranging from 5% to 40%.<sup>19</sup>

GI disturbances like abdominal distension, diarrhoea, constipation and persistent diarrhoea are commonly seen in these people which was replicated in our study with 45% having GI problems, mainly diarrhoea, which has been hypothesized to be due to immune deregulations seen in autism.<sup>20</sup>

Previous studies report about 50% of autistic individuals are intellectually subnormal while there is paucity of studies to establish autistic features in the intellectually disabled.

There was excellent correlation between mean Autism scores as measured by ISAA and SCQ, probably indicating ISAA being a potential new tool for screening ASD.

IQ scores had no correlation with Autism severity scores in SCQ or ISAA, probably indicating that intelligence in individuals with ASD is difficult to measure owing to their marked variability in performance in various domains of intelligence & also the clinical heterogeneity of the autism spectrum itself.

The behavioural problems (BPI) had a high positive correlation with autism scores (ISAA & SCQ) compared to IQ scores, indicating the higher probability of autism, rather than intellectual disability, which was associated with behavioural problems.

Individuals with Moderate Autism had more behavioural problems than those with Mild Autism which was statistically significant (p= 0.0049).

Good correlation between social relationship & reciprocity and emotional responsiveness sub scores of ISAA and SCQ scores suggests that these domains are best detected by ISAA, which form the core criteria for diagnosing ASD as per DSM V.

Nevertheless, these observations mandate further exploration, owing to the small sample size.

### LIMITATIONS

Some potentially limiting issues need to be addressed when interpreting the results of our study. The study was conducted on a small, biased sample and hence would have poor generalizability. The centre caters to predominantly low and middle socio-economic strata, children from higher strata were not included. Autism and its socio-perceptive deficits per se would affect performance in IQ tests and act as a confounding factor. An intentional step in methodology of the study was to exclude subjects with severe and profound intellectual disabilities due to overlapping clinical spectrum of such a group with ASD.

Subtler details of comorbid conditions would facilitate better management of the same.

### CONCLUSION

In summary, this study indicates a notable prevalence of autism among those with Mild/Moderate ID of about 16.39%. As per studies up until the last decade, ASD diagnosis in individuals with ID is often delayed and, in certain cases, may not be recognized until adulthood.<sup>21</sup> Hence, this study should propel the need for assessing ASD in ID which is a more severe phenotype than ID alone as it is known to be associated with significant behavioural problems which increases with the increasing severity of autism.

Medical comorbidities like seizure disorders and gastrointestinal disturbances are common in these individuals, which when aptly recognised and addressed, may improve the quality of life.

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