



A STUDY OF DEMOGRAPHIC AND RISK FACTORS OF CHILDREN WITH AUTISM SPECTRUM DISORDER

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ABSTRACT

Background of the study: Various risk factors have been reported in the development of Autism spectrum Disorder. The aim of our study is to explore the demographic and perinatal risk factors implicated in the development of ASD. A retrospective study was conducted with data of 49 children with ASD and found that total 71.3% of children were male 73.5% were in first birth order. Out of 49 children 53.1% had history of Lower Segment Caesarean Section (LSCS). Indication of LSCS due to various obstetric or perinatal risk factors were reported in 17 cases. Three children had history of low birth weight with history of admission into Neonatal ICU. The study also explore the various co morbidity and found that ADHD (20.4%) was most common comorbidity followed by Mental retardation(18.4%), ADHD and MR(12.2%), seizure disorder and MR (8.2 %). This study found that male gender, first birth order and perinatal risk factors are implicated in the development of Autism spectrum Disorder and majority of them have one or more another neuro developmental disorder as a comorbidity.

KEYWORDS : Neurodevelopmental, Perinatal risk factor, Birth order, Mental Retardation.

INTRODUCTION:

Autism spectrum disorder(ASD) is a neurodevelopmental disorder and it causes life long impact in these individuals. The core feature of ASD is difficulty in reciprocal communication and delay in speech and language development. There is also problem with nonverbal communication and the disorder is more prevalent in male child than in female child. Intellectual disability has been found as a common co-morbid condition with other neurodevelopmental disorder in children with autism. Seventy percent of children with ASD may have one comorbid mental disorder⁽¹⁾. It has been observed that globally one in 160 children has an autism spectrum disorder⁽²⁾. In India approximately 1.7-2 million children are affected with Autism Spectrum Disorder⁽³⁾. There are various etiological factors that are manifested with ASD. Various epidemiological study also reported that exposure to prenatal, perinatal and neonatal complications as a risk factor for the development of ASD. The first epidemiological study by Mamidala et al from India identified 25 risk factors of ASD due to prenatal, perinatal and neonatal complications⁽⁴⁾. The study regarding evaluation of risk factors in children with autism has not been done in this region of our country. The aim of our study is to assess the demographic and risk factors and psychiatric comorbidity in children with Autism Spectrum Disorder.

Aim and Objective of the study:

1. To assess the demographic profile and risk factors of children with ASD.
2. To assess the presence of comorbid diagnosis in children with ASD

METHOD AND MATERIAL:

Place of the study: The study was conducted in the psychiatry department of Gauhati Medical college and Hospital (GMCH).

Study design: This is a retrospective study.

Description of Tools:

Sociodemographic and clinical data proforma was prepared

to collect the information DSM-5 criteria was used for the diagnosis of ASD and other comorbid diagnosis. (Diagnostic and Statistical manual of Mental disorder fifth edition)

INCLUSION CRITERIA:

All Children diagnosed with ASD both male and female as per DSM-5 criteria.

Methodology: The data will be collected from the case history sheet of the child guidance clinic (CGC) of department of Psychiatry of Gauhati medical college and hospital (GMCH). The children attending CGC Clinic were evaluated by junior resident initially and diagnosed by Senior Psychiatrist as per DSM-5 criteria. Quantification of IQ in case of ASD with Mental retardation were done by clinical psychologist. The children with ASD were also referred for speech, language therapy and behavior therapy. The case history will be evaluated for sociodemographic data and detail history regarding prenatal, postnatal factors and early developmental mile stones, history of seizure, family history and other neurodevelopmental disorder. The information will be collected with the help of semi structured clinical data proforma prepared for the study. The retrospective chart review will be done for the period between 2017 to 2019.

STATISTICAL ANALYSIS:

Data will be plotted in master chart and statistical evaluation will be done by IBM SPSS software version 21.0. Descriptive statistics will be applied in the study.

Ethical clearance was obtained for the study from the Institutional Ethical Committee, Gauhati Medical College & Hospital.

RESULT: Our study found that 49 numbers of children with Autism attended Child Guidance Clinic during the period from 2017 to 2019 and the mean age of the children is 7.3827sd3.8912 (2 to 17 years).

Table 1 : Demographic variable of children with ASD.

Variable	N(49)	%
Age (Years)		
2-5	16	32.6
6-10	23	46.9
11-14	6	12.2
15-18	4	8.1
Sex		
Male	35	71.4
Female	14	28.5
Locality		
Rural	28	57.1
Urban	21	42.9
Religion		
Hindu	42	85.7
Muslim	7	14.3
Family Type		
Nuclear	45	91.8
Joint	4	8.2

Table 1 represent the sociodemographic characteristics of children with ASD. The percentage of children between 2to 5 years is 32.6%, Six to10 years is 46.9% and lowest in 15 to 18 years group(8.1%). In the present study 35 no (71.4%) % of them are male children and 14 numbers (28.5%) are female children.

Eighty five point seven percent (85.7%) belong to Hindu and 14.3% belong to Muslim religion. Majority of children 57.1% are from rural and 42.9% are from urban background. Ninety one point eight percent(91.8%) children are from nuclear family. Regarding birth order of children, 73.5% children are first born child, 20.4% are second born and 4.1% are third born child.

Table 2: Clinical Characteristics of Study population.

Variable	N (49)	%
Birth Order		
1 st	36	73.5
2 nd	10	20.4
3 rd	2	4.1
4 th	1	2.0
Mode of Delivery		
LSCS	26	53.1
SVD	20	40.8
Forcep/Ventouse	3	6.1
Delivery		
Post dated	3	6.1
Preterm	7	14.3
Term	39	79.6
Birth weight		
Reported	17	34.69%
Not Reported	32	65.39%

LSCS=Lower Segment Caesarean Section; SVD= Spontaneous Vaginal Delivery

The risk factors regarding obstetric and birth complication, mode of delivery and birth wt. of children with Autism are shown in the Table 2. Percentage of preterm delivery was 14.3%, postdated delivery was 6.1%. Delivery at term was 79.6%. Percentage of spontaneous vaginal delivery was 40.8% and instrumental or assisted delivery was 6.1%. LSCS was found in 53.1% cases. Birth weight was reported in 17(34.69 %) cases and mean birth weight was 2.7290 (2 to 3.5 kg). Low birth weight was found in 2 no of cases. Neonatal jaundice was found in 3 no of cases and admitted in the neonatal intensive care unit (NICU).

Table 3: Indication of LSCS due to perinatal risk factors in 17 no of cases:

Perinatal risk factors	N(17)	%
Breech presentation	5	29.4
Post dated	2	11.8
Oligohydraminos	2	11.8
Diarrhoea in mother	1	5.9
Gestational hypertension with ovarian cyst	1	5.9
Antepertum hemorrhage	2	11.8
No labour pain	1	5.9
Elective	1	5.9
Decreased foetal movement	2	11.8

The various indications of LSCS found in 17 no of cases and presented in Table 3. LSCS due to breech presentation was found in 5(29.4%) cases, Postdated pregnancy in 2 no (11.7%) cases, Oligohydraminos in 2(11.7%) cases, antepertum hemorrhage in 2(11.7%) cases and LSCS due to decreased foetal movement was found in 2 (11.7%) cases. LSCS due to no labour pain was in 1 (5.8%) case, elective LSCS in 1(5.8%), due to diarrhea in 1(5.8%) and LSCS due to gestational hypertension with ovarian cyst in 1(5.8%) case.

Table 4: Other Psychiatric diagnosis of children with ASD

Co morbid Diagnosis	N(49)	%
ADHD	10	20.4
Seizure disorder	2	4.1
MR	9	18.4
ADHD+ Seizure	4	8.2
ADHD+MR	6	12.2
Seizure+MR	4	8.2
Absent	14	28.6

ADHD= Attention Deficit Hyper Activity Disorder; MR = Mental Retardation

Regarding psychiatric comorbidity in children with autism, majority of the children have more than one comorbidity. ADHD was found in 20.4%, Mental retardation 18.4%, ADHD with MR in 12.2%, ADHD with seizure in 8.2%, seizure with MR in 8.2% and Seizure disorder in 4.1% cases of children with Autism. Fourteen children with ASD do not have the comorbid diagnosis.

DISCUSSION:

The present study found that total 49 no of children with Autism were attended the CGC between 2017 to 2019 and mean age of the sample 7.3SD3.8years. Majority of children (46.9%) were between the age group of 6to 10 years. Mean age of our sample is almost similar with the finding of Bhatt et al from India⁽⁵⁾. The mean age of their study was 6.50sd3.06 years .In accordance with the previous study our study also found more no of male 71.4% than female 28.5% in children with ASD. The male to female ratio (2.5:1) of the present study was also in accordance with the previous Indian study⁽⁵⁾ whereas another Indian study by Girimaji SR et al reported higher male to female ratio (9:1) in 50 cases of Pervasive developmental disorder (PDD)⁽⁶⁾.

The percentage of rural (57.1%) children with autism is higher than urban (42.9%) population which is in accordance with the first population based study from Northwest part of India⁽⁷⁾.

The percentage of first born child in the present study was 73.5%. The increased risk of ASD in first born child has been reported by Gardner et al. The meta-analysis reported that 61% increased in risk of developing autism in first- born children than to the child born later⁽⁸⁾. The percentage of second born child with ASD was 20.4% in the current study although history of ASD in their first born sibling was not reported. The study regarding recurrence risk of ASD in subsequent children has been reported 18.7% and one of the strong predictors has been male gender⁽⁹⁾.

The present study found the various perinatal risk factors in children with autism. LSCS was done in 53.1% cases due to breech presentation, postdated pregnancy, oligohydraminos, antepertum hemorrhage, no labour pain, decreased foetal movement, elective LSCS and due to gestational hypertension. The associations of these risk factors in ASD have been reported by Hannah Gardner et al in their meta analysis and found that abnormal presentation, maternal hemorrhage, low birth weight and hyperbilirubinemia were the risk factors associated with ASD^[8]. Xin Zhang et al reported the risk factors related to ASD in a case control study are preterm delivery, post dated delivery, low birth wt. and neonatal jaundice and our study also found the similar risk factors in these children with autism^[10]. In the present study the neonatal risk factor was found in 5 children. Birth weight was reported in 17 cases and two of them had LBW and other 3 children had history of neonatal jaundice and NICU admission. The perinatal and neonatal risk factors found in the present study was in accordance with an epidemiological study done on risk factors of ASD from India^[4]. A multinational cohort study of 5 million births found that emergency or elective caesarean section is consistently associated with risk of ASD when compared to vaginal delivery^[11]. Although in our study LSCS was reported in 53.1% cases but indication of LSCS was reported in 17 cases. A population based study by Eileen A et al investigate the association between obstetric mode of delivery and ASD and reported that children born by LSCS were approximately 20% more likely to develop ASD^[12].

Previous studies reported the common comorbidities in children with ASD were ADHD, Mental retardation and seizure disorder. In the present study sample one of the common comorbidities was mental retardation (18.4%). Fombonne et al reported that high percentage of children with ASD had comorbid mental retardation (MR)^[13]. Khess R J et al from India reported that in children with MR 11% of them had autism spectrum disorder^[14]. Presence of high comorbid diagnosis of mental retardation in ASD could be a confounding factor for the development seizure disorder in these children. Danielson et al in a population based follow up study reported that prevalence of epilepsy in ASD was 38%^[15]. Another study from Tertiary care Epilepsy Clinic reported that 32% children with epilepsy fulfilled the criteria of ASD^[16]. Evidence from meta-analysis found that occurrence of epilepsy in autism is associated with severity of intellectual disability and gender^[17]. In the present study 20.4% children with ASD had co morbid diagnosis of ADHD. Girimaji et al studied comorbid psychiatric diagnosis of 50 children with PDD and reported that ADHD was the one of the comorbid diagnosis among the common comorbid diagnosis^[8]. In this study family history of psychiatric illness and seizure disorder was not reported.

Strength and limitation of the study:

This is the first study on ASD to explore the risk factors in this region of our country.

The study is a retrospective study with small sample size .
Age of the parent at the time of child birth was not recorded.
More than half of the sample birth weight was not reported.

CONCLUSION:

Our study has found that the children with ASD have demographic risk factors and risk factors related to obstetrics and birth related complications. And majority of them have other psychiatric comorbidities. Proper antenatal check up and psychoeducation to the pregnant mother regarding neurodevelopmental disorder and creating awareness to the Obstetricians regarding sequelae of obstetrical complication leading to ASD is the need of the hour. A prospective follow up study with a large sample size will provide more insight into the risk factors in the development of Autism spectrum disorder.

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