Risk factors associated with Autism Spectrum Disorder in Universiti Kebangsaan Malaysia Medical Centre, a University Hospital in Malaysia

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BACKROUND

- Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by impairments in social communication and presence of specific behaviours, stereotypies and sensory issues.
- The exact aetiologies are not yet known.
- In this study, we explored associations of specific risk factors in children with ASD compared to typically developing (TD) children.
- We also investigated presence of behavioural difficulties and self-regulation problems early in life in ASD children.

OBJECTIVES

General objective

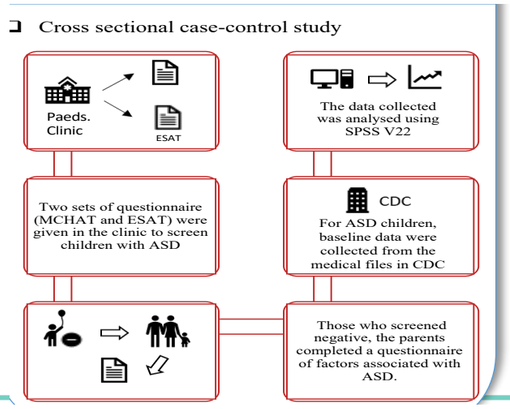
- To determine risk factors associated with ASD comparing ASD children to typically developing children (TD) in Universiti Kebangsaan Malaysia Medical Centre (UKMMC), a university hospital in Malaysia

Specific objective

- To determine factors related to behavioural and self-regulatory issues in ASD compared to TD children.

METHODS

- Cross sectional case-control study



RESULTS

Table 1a: Baseline Characteristics of ASD vs. TD children

		ASD (n=301)	Non ASD (n =68)	
Child		**ASD (mean±SD)**	**Non-ASD (mean±SD)**	**p-value**
Age (months)		45.52 ± 19.546	50.44 ± 20.074	0.063
Birth weight (Kg)		3.0268 ± 0.50585	3.0928 ± 0.55940	0.341
Week of gestation		38.62± 1.916	38.44± 1.782	0.487
		ASD(%)	**Non-ASD(%)**	
Child Sex	Male	87.4	61.8	
	Female	12.6	38.2	**<0.001***
Race	Malay	69.8	80.9	
	Chinese	24.6	10.3	
	Indian	3.7	5.9	
	Others	2	2.9	0.071

* statistically significant at p<0.05

Risk Factors (Bivariate analysis)

Variables	p-value
Child sex	< 0.001
Comorbidities	< 0.001
Child on medication	0.001
Birth order	0.001
Family history of developmental delay	< 0.001
Complication at birth	0.036
Maternal age at delivery	0.013
Duration of breastfeed	0.001
Mother's education	0.001
Maternal medication	0.039
Mode of delivery	0.039

Risk Factors (Multivariate analysis)

Variables	p-value	OR (CI)
Birth Order	0.004	**2.443 (1.33 to 4.50)**
Family history of developmental delay	< 0.001	**7.125 (3.31 to 15.34)**
Neurodevelopmental Comorbidities (ID, ADHD)	< 0.001	**3.556 (1.94 to 6.52)**

Regulatory and behavioural issues (Bivariate analysis)

Variables	p-value
Abnormal Behaviours	< 0.001
Sleeping problem	0.005
Tantrum	< 0.001
Breastfeeding	0.256
Number of siblings	0.202

Regulatory and behavioural issues (Multivariate analysis)

Variables	p-value	OR (CI)
Abnormal Behaviours	0.004	**5.988 (1.79 to 19.99)**
Tantrums	< 0.001	**4.642 (2.11 to 10.21)**
Breastfeeding	0.223	0.557 (0.22 to 1.43)

CONCLUSIONS

- Children with **ASD** at UKMMC were found to be **predominantly male**, with 87% males to 13% females.
- Parents of children with ASD showed statistically significantly **higher levels of education** compared to parents of TD children.
- For **Birth Order**, ASD children had an **increased risk by 2-fold** of being firstborn compared to TD children.
- Children with ASD were **7 times more likely to have a family history of neurodevdelopmental issues** and **3 times more likely to have comorbid neurodevelopemental diagnoses** such as intellectual disability (ID) or ADHD.
- Comparing ASD children with typically developing children, ASD children had an **increased risk (5-fold) of having abnormal behaviours in the first year of life** and **displaying temper tantrums (4-fold)**.
- Previous literature reported similar link with birth order: Children with ASD were more likely to be first-born (Ugur et al., 2019). This may be due to genetics or families with ASD child not having another child soon after.
- ASD is a condition with strong genetic basis and shared genetic risks within families. Hansen et al.(2011) reported **r**ecurrence risk of developing ASD increased 2-fold in those who had cousins with developmental delay.
- Children with ASD were more likely to have co-morbid neurodevelopmental conditions like ID or ADHD. In ASD, the same variants associated with ASD have been linked with ID (Geschwind et al., 2011).
- **Regulatory and behavioural issues**: Parents of children with ASD often recall that even in the first year of life, their children with ASD tended to throw tantrums when the parents deviated from normal routines and showed abnormal behaviours such as the use of a person as an inanimate object (Young et al., 2015). These behaviours may occur even earlier than expected in ASD, although there is risk of recall bias here.

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