

The diagnosis of autism spectrum disorder in Nghe An province, Vietnam

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Abstract. Autism spectrum disorder (ASD) refers to a range of conditions characterized by some degree of impaired social behavior, communication and language. According to the ADDM prevalence of ASD changes from 1 in 150 children in 2000 to 1 in 59 children in 2014. The prevalence of ASD in Vietnam found as 0.415%. According to research of 2019 the prevalence of ASD in Vietnam was significantly higher in urban -1.238% than in rural areas 0.580%. In the absence of biomarkers, the diagnosis of Autism Spectrum Disorder (ASD) is based on the behavioral presentation of an individual. 400 preschool teachers from 187 schools trained to identify signs of ASD, 49% who had good results and skills to work with potentially autistic children. 441 children with autistic signs were detected after teachers had learned to identify and behave correctly with such children. Among 441 children with autistic signs presented by preschool teachers, 154 children (34.9%) were treated. As expected, the most common group of children who had ASD symptoms were children 18-24 months (35.4%). The ASD incidence rate for boys and girls was 75.5-24.5, which only confirmed the worldwide trend. Children living in cities were most affected by ASD 41.5%. Following treatment, severe ASD levels decreased from 89.5% to 45%. The fact that a decrease in severe ASD indicates the correctness and feasibility of diagnostic and therapy. ASD should be considered as a complex disorder. In Nghe An, there is no research on the epidemiology of ASD in children. Therefore, the detection and organization of treatment and teaching of children are very necessary in order to create conditions for children to develop a fuller personality, integrate into the community, and reduce the burden for themselves to grow up later reducing the burden on the family and society.

Keywords: autism spectrum disorder, Vietnam, evidence-based medicine, early diagnostic, hobbler, children.

INTRODUCTION

Autism spectrum disorder (ASD) refers to a range of conditions characterized by some degree of impaired social behavior, communication and language. ASDs begin in childhood and tend to persist into adolescence and adulthood. In most cases the conditions are apparent during the first 5 years of life (Yen, 2014; World Health Organization, 2019). Intellectual disability is observed in more than half of ASD cases (Baio et al., 2018).

Prevalence of ASD

According to ADDM prevalence of ASD changes from 1 in 150 children in 2000 to 1 in 59 children in 2014 (Hossain et al., 2017). A recent systematic review reported the increasing trend in prevalence of ASD in South Asia, ranging from 0.09% in India to 1.07% in Sri Lanka (Baxter et al., 2015). In 2014, a screening program by Yen et al. implemented among 94,186 children aged 18–60 months in three provinces/cities in the North of Vietnam found an ASD prevalence of 0.415% (Klin et al., 2015). This is higher than figures reported by previous surveys in Vietnam (i.e. 0.46% in 2007, 0.416–0.52% in 2013–2014) suggesting that ASD prevalence among the children in Vietnam may be increasing, consistent with the global trend of ASD currently (Hoang et al., 2019). Increasing degree of urbanization was associated with higher risk of ASD (Park et al., 2016). According to research of 2019 the prevalence of ASD in Vietnam was significantly higher in urban -1.238% than in rural areas 0.580%. Boys living in rural areas had 3.13 times higher odds of having ASD than girls living in rural areas, boys living in urban areas had 9.46 times higher odds of having ASD than girls living in rural areas (Lauritsen et al., 2014).

Etiology and Symptoms

ASD is not a single disorder. It is now broadly considered to be a multi-factorial disorder resulting from genetic and non-genetic risk factors and their interaction (Wang et al., 2017). Evidence for genetic variants in the etiology of ASD includes genes involved in intellectual disability and neuropsychiatric disorder, common pathway genes and ASD-risk genes, multigenic contributions from rare or common variations, DNA mutations, and environmental effects on gene expression and/or protein function (Taylor et al., 2016).

Connection between ASD and perinatal period is proved. During the prenatal period, the factors associated with ASD risk were maternal and paternal age ≥ 35 years, mother's and father's race: White and Asian, gestational hypertension, gestational diabetes, maternal and paternal education college graduate+, threatened abortion, and antepartum hemorrhage. During perinatal period, the factors associated with ASD risk were caesarian delivery, gestational age ≤ 36 weeks, parity ≥ 4 , spontaneous labor, induced labor, no labor, breech presentation, preeclampsia, and fetal distress. During the postnatal period, the factors associated with ASD risk were low birth weight, postpartum

hemorrhage, male gender, and brain anomaly (Devlin and Scherer, 2012).

In the absence of biomarkers, diagnosis of Autism Spectrum Disorder (ASD) is based on the behavioral presentation of an individual. The 'gold standard' in ASD diagnosis is a best estimate clinical diagnosis which is determined in accordance with current diagnostic classification systems and following rigorous assessment practices. 'Best-practice' ASD assessments are more comprehensive, and also comprise standardized developmental or cognitive testing, language assessment and information from more than one setting. The assessment results are used to inform diagnostic decision-making, which is based on current diagnostic classification systems. Rigorous assessments enhance the accuracy of diagnoses and provide information about an individual's strengths and difficulties which is important for intervention planning (American Psychiatric Association, 2013).

Diagnostic criteria (Ha et al., 2014):

A. persistent deficits in social communication and social interaction across multiple contexts as manifested by all of the following, currently or by history

- Deficits in social-emotional reciprocity.
- Deficits in nonverbal communicative behaviors used for social interaction.
- Deficits in developing, maintaining, and understanding relationships.

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history:

- Stereotyped or repetitive motor movements, use of objects, or speech.
- Insistence on sameness, inflexible adherence to routines, or ritualised patterns of verbal or nonverbal behavior.
- Highly restricted, fixated interests that are abnormal in intensity or focus
- Hyper- or hypoactivity to sensory input or unusual interest in sensory aspects of the environment.

C. Symptoms must be present in the early developmental period.

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum

disorder and intellectual disability, social communication should be below that expected for general development level.

Specify if:

- With or without accompanying intellectual impairment
- With or without accompanying language impairment
- Associated with a known medical or genetic condition or environmental factor
- Associated with another neurodevelopmental, mental or behavioral disorder
- With catatonia

MATERIALS AND METHODS

Prevalence studying of children at age from 12-72 months old in some regions representing 20 districts and towns of Nghe An province from August 2011 to August 2013.

The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000. All the patients did agree to participate in the experiment and do not deny the results of the experiment to be provided in the research paper. The minors' parents and guardians do not deny the results of the experiment to be provided in the research paper.

RESULTS

400 preschool teachers from 187 schools were trained to identify signs of ASD, 49% of which had good results and skills to work with potentially autistic children.

Table 1. The results of preschool teacher training

No.	City, district, town	Number of classes	Number of trainees	Output	
				Good	Ordinary
1	Vinh	2	80	55%	45%
2	Dien Chau	2	80	57%	43%
3	Quynh Luu	2	80	59,5	40,5%
4	Nghia Dan	1	40	45%	55%
5	Thanh Chuong	1	40	46%	54%
6	Tan Ky	1	40	45%	55%
7	Quy Chau	1	40	46%	54%
	Total	10	400	49%	51%

441 children with autistic signs were detected after the teachers have learned to identify and correctly behave with such children.

Table 2. Number of children introduced by already trained preschool teachers to the ASD department

No.	District, city	Number of children	%	p
1	Vinh	251	56.9	<0.01
2	Dien Chau	55	12.5	
3	Quynh Luu	51	11.6	
4	Nghia Dan	22	5.0	
5	Thanh Chuong	23	5.2	
6	Tan Ky	20	4.5	
7	Quy Chau	19	4.3	
	Total	441	100	

Among 441 children with autistic signs being introduced by preschool teachers, 154 children (34.9%) were treated.

Table 3. Number of children treated in the department

No.	District, city	Number of children	%	p
1	Vinh	91	59.1	<0.01
2	Dien Chau	21	13.6	
3	Quynh Luu	15	9.7	
4	Nghia Dan	9	5.8	
5	Thanh Chuong	7	4.5	
6	Tan Ky	6	3.9	
7	Quy Chau	5	3.2	
	Total	154	100	

Distribution of autistic children by age, gender and geographic region

As expected, the most common group of children who had ASD symptoms were children 18-24 months (35.4%).

Table 4. Distribution of children with autism treatment by age

Variable	n	%	p
2-year-old children (18-24 months)	81	35.4	<0.05
3-year-old children (25-36 months)	66	28.8	

4-year-old children (37-48 months)	37	16.1	
5-year-old children (49-60 months)	23	10.1	
6-year-old children (61-72 months)	22	9.6	
Total	229	100	

The ASD incidence rate for boys and girls was 75.5-24.5, which only confirmed the worldwidetrend.

Table 5. Distribution of children with autism treatment by gender

Gender	n	%	Age average	p
Male	173	75.5	3,27 ± 1,29	<0.05
Female	56	24.5	3,65 ± 1,56	
Total	229	100	3.46 ± 1.43	
p		<0.05		

Children living in cities were the most affected by ASD 41.5%

Table 6. Distribution of children with autism treatment by region

Variable	n	%	p(1-4)
City	95	41.5	< 0,05
Delta	72	31.4	
Mountaint region	21	9.2	
Alpine region	41	17.9	
Total	229	100.0	

Following treatment, severe ASD levels decreased from 89.5% to 45%. The fact that a decrease in severe ASD indicates the correctness and feasibility of diagnostic and therapy.

Table 7. The level of psychological improvement after intervention

Variable	Before intervention		After intervention		p
	n	%	n	%	
Mild and moderate ASD	24	10.5	126	55.0	<0.01
Severe ASD	205	89.5	103	45.0	<0.01
Total	229	100.0	229	100.0	
CARS scale	\bar{X} 40.82	SD 3.55	35.93	3.81	<0.01

The fact that a decrease in Severe ASD indicates the correctness and feasibility of diagnosis and therapy.

DISCUSSION

In Vietnam, ASD has been often socially constructed as a disease and family problem. Children with ASD and their parents face various forms of stigma and discrimination. Families 'treat' children using a large variety of medical and religious interventions. Children with ASD experience a shortage of affordable and quality services. Culturally adapted diagnostic protocols and low cost interventions are needed (Tran and Weiss, 2018). At present, in Vietnam, there is no oversight of ASD services. Literally any individual or agency can provide whatever services they want, without any government oversight. Regarding treatments provided by agencies, although most of interventions reported to be used EBP or mixed-EBP methods, there were 17.6% non-EBP methods reported used. There are likely not only are of no value for the child but also waste the time and money of the family, and opportunities for development of the child, and these some of these treatments may be potentially harmful. In addition, the ultimate failure of these treatments may undermine families' confidence in the education and health care systems. In regards to the intervention approach EBP is considered "appropriate", only 27.9% agencies met these criteria (Samms-Vaughan et al., 2017).

Diagnostic and Treatment of ASD

The Childhood Autism Rating Scale (CARS) was developed to more accurately identify persons with higher cognitive functioning and has two separate forms, one for persons with estimated IQs equal to and below 79, and one for those with IQs equal to or above 80 (Schopler et al., 2010; Chlebowski et al., 2010). CARS have 15 domains: relating to people; imitation; emotional response; body use; object use; adaptation to change; visual response; listening response; taste, smell, and touch response; fear or nervousness; verbal communication; non-verbal communication; activity level; level and consistency of intellectual response and general impressions (Perera et al., 2017). Another modern sensitive methods for ASD diagnostic: Pictorial Autism Assessment Schedule (PAAS) (Choueiri and Wagner, 2015), Rapid Interactive Test for Autism in Toddlers (RITA-T) (Zwaigenbaum et al., 2015), Screening Test for Autism in Two-Years-Old (STAT) (Richards et al., 2012), Modified Checklist for Autism in Toddlers (M-CHAT) (Richards et al., 2012).

Evidence supports the usefulness of ASD-specific screening at 18 and 24 months. ASD screening before 24 months may be associated with higher false-positive rates than screening at ≥ 24 months but may still be informative (Stenberg et al., 2014).

Various educational and behavioral treatments have been the mainstay of the management of ASD. Most experts agree that the treatment for ASD should be individualized. Treatment of disabling symptoms such as aggression, agitation, hyperactivity, inattention, irritability, repetitive and self-injurious behavior may allow pharmacological, educational and behavioral interventions to proceed more effectively (Adler et al., 2015). ASD has been identified as a risk marker for self-injurious behavior. Presence of self-injury was associated with significantly higher levels of impulsivity and

hyperactivity, negative affect and significantly lower levels of ability and speech (Volkmar et al., 2014).

Medical management includes typical antipsychotics, atypical antipsychotics, antidepressants, selective serotonin reuptake inhibitors, α 2-adrenergic agonists, β -adrenergic antagonist, mood stabilizers, and anticonvulsants (McPheeters et al., 2011). Antipsychotics were effective in treating the repetitive behaviors in children with ASD; however, there was not sufficient evidence on the efficacy and safety in adolescents and adults (Richards et al., 2012). Due to the fact autistic symptoms remain refractory to medical treatment, such patients need Deep Brain Stimulation as alternative method of treatment (McPheeters et al., 2011).

Recommendations and Tactics

- The developmental assessment of young children and the psychiatric assessment of children should routinely include questions about ASD symptomatology.
- If the screening indicates significant ASD symptomatology, a thorough diagnostic evaluation should be performed to determine the presence of ASD.
- Clinicians should coordinate an appropriate multidisciplinary assessment of children with ASD
- The clinician should help the family obtain appropriate, evidence-based, and structured educational and behavioral interventions for children with ASD.
- Pharmacotherapy may be offered to children with ASD when there is a specific target symptom or comorbid condition
- The clinician should maintain an active role in long-term treatment planning and family support and support of the individual
- Clinicians should specifically inquire about the use of alternative/complementary treatments and be prepared to discuss their risk and potential benefits²⁴

CONCLUSION

ASD should be considered as a complex disorder. In Nghe An, there is no research on the epidemiology of ASD in children. Therefore, the detection and organization of treatment and teaching of children are very necessary in order to create conditions for children to develop a fuller personality, integrate into the community, and reduce the burden for themselves to grow up later reducing the burden on the family and society.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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