

The Situation and Factors Related to the Health of Children with Autism Spectrum Disorder in Ninh Kieu District Early Childhood Schools in Cantho City during 2020-2021

Lam Phuc Duong^{1*} and Trang Thu Thi Ho²

¹Department of Public Health, Can Tho University of Medicine and Pharmacy, Can Tho City, Vietnam

²Department of Medical Pharmacy, Washington State University Tri-Cities, Richland, USA

Abstract

Autism spectrum disorder is on the rise. In a study by the national children's hospital, within seven years, the number of autistic children coming to the clinic increased by fifty times, and the number of visits for treatment increased by thirty-three times. With a cross-sectional descriptive study design and analysis of 304 children who have been diagnosed with autism spectrum disorder and are receiving intervention in preschools and special education centers in Ninh Kieu District, Can Tho city, from 2020 to 2021, the results showed that 53.3% of children had severe autism spectrum disorder; 86.5% of children had quality defects in social relations; 87.5% of children had communication quality defects; 85.2% of children had abnormal behavior defects; and there was a relationship between sleep time, family time spent with children, children's time using technology, and the severity of children with autism spectrum disorder.

Keywords: The Childhood Autism Rating Scale (CARS) • Autism spectrum disorder • Intelligence Quotient (IQ) • World Health Organization (WHO) • Prevention

Abbreviations: ASD: Autism Spectrum Disorder; CARS: The Childhood Autism Rating Scale; CDC: Centers for Disease Control and Prevention; CDD: Childhood Disintegrative Disorder; DSM: Diagnostic and Statistical Manual; ICD: International Statistical Classification of Diseases and Related Health Problems; IQ: Intelligence Quotient; MCHAT: Modified Checklist for Autism in Toddlers; PDD-NOS: Pervasive Developmental Disorder-Not Otherwise Specified; PDDs: Pervasive Developmental Disorder; WHO: World Health Organization

Introduction

According to estimates by the Centers for Disease Control and Prevention (CDC) autism and disability monitoring network, this rate was 1 in 150 children in 2000; in 2010, it was 1 in 68, an increase of 119.4%. In the study on the disability model in children of the department of rehabilitation of the national children's hospital in the period 2000-2007, it was found that the number of autistic children coming to the clinic in 2007 increased fiftyfold times compared to 2000; the number of children with autism spectrum disorder receiving treatment in 2007 increased thirty-threefold times compared to 2000; and they were diagnosed late at the national children's hospital (43.86% over 36 months old). According to research by Thanh Ngoc Minh, children with severe autism spectrum disorder accounted for

92.3%. Research by Nguyen Thi Huong Giang showed that children with severe autism spectrum disorder accounted for 85.7% [1]. Therefore, understanding the issues related to autism spectrum disorder in order to screen and detect early risk factors can prevent autism disorder in children before the age of three years, helping children have more opportunities to learn about autism. I conducted a research project with the following two goals:

- Determine the rate and typical manifestations of children with autism spectrum disorder in preschools in Ninh Kieu District, Can Tho city, in 2020-2021.
- Investigate factors related to the severity of autism spectrum disorder in children at preschools in Ninh Kieu District, Can Tho city, in 2020-2021.

***Address for Correspondence:** Lam Phuc Duong, Department of Public Health, Can Tho University of Medicine and Pharmacy, Can Tho City, Vietnam, E-mail: dplam@ctump.edu.vn

Copyright: © 2023 Duong LP, et al. This is an open-access article distributed under the terms of the creative commons attribution license which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Received: 20 April, 2023, Manuscript No. CSR-23-96609; **Editor assigned:** 24 April, 2023, PreQC No. CSR-23-96609 (PQ); **Reviewed:** 09 May, 2023, QC No. CSR-23-96609; **Revised:** 10 July, 2023, Manuscript No. CSR-23-96609 (R); **Published:** 18 July, 2023

Materials and Methods

Research subjects

Subjects of the study: Children with autism spectrum disorders who attend preschools and special education facilities in Cantho city's Ninh Kieu District in 2020 and 2021. **Sampling requirements:** In the Ninh Kieu district, children with autism spectrum disorder who are between the ages of 2 and 8 are receiving special education interventions in preschools or special education centers for at least six months. Individuals caring for the child directly in Cantho City in 2020–2021. Subjects who provided direct care for children were excluded from the study because they declined to take part.

Research methods

Study design: Descriptive cross-sectional analysis sampling method and sample size: Randomization, multiple stages, with 304 children with autism spectrum disorder meeting the criteria.

Research content

General traits of research participants, CARS measured severity levels for autism spectrum disorder, particular symptoms, and a few variables that affect how severe an ASD diagnosis is in youngsters using a collection of prepared questions as research tools and data processing techniques data processing used excel 2007 and SPSS 20.0 to compute the percentages of the research variables.

Characteristics		Frequency (n)	Ratio (%)
Sex	Male	204	67,1
	Female	100	32,9
Age group	≤ 36 months old	52	17,1
	37-48 months old	112	36,8
	49-60 months old	68	22,4
	61-72 months old	52	17,1
	>72 months old	20	6,6
Children's sleep time	<10 hours/day	202	66,4
	10-12 hours/day	69	22,7
	>12 hours/day	33	10,9
Order of children in the family	Only child	136	44,7
	The eldest child	58	19,1
	Second child	12	3,9
	The youngest	98	32,2

Table 1. General characteristics of children with autism spectrum disorder.

According to the results of Table 2, it shows that the 66.8% of direct carers are female 33.2% are male, and the majority of carera are in the age groups from 20 to 35 years old (57.9%) and the over 35 years old (41.8%) [4]. Accounted for the majority of times, 57.9% and 41.8. The respectively lowest age group is under 29 years

The study was carried out in compliance with the regulations of the ethical council of the Can THO university medicine and pharmacy and was approved by leaders at the universities to collect data before implementation. The study used self-completed questionnaires and did not collect the names and personal information of the research subjects to ensure the confidentiality of the information for the research subjects. The study did not affect the interests, reputation, or personality of the research participants [2]. Subjects had the right to refuse to participate in the research; research was only conducted on people who were willing and able to participate. The research did not contain information that was contrary to the customs and ethics of the community.

Results

During the period from June 2010 to March 2021 at star 1 Kindergarten obtained and GT care center, the following results were obtained: General characteristics of the study subjects and general characteristics of children with autism spectrum disorder.

Males account for 67.1% of children with autism spectrum disorder; the 37-48 months age group accounts for 36.8%; a sleeping time of 10 hours per day accounts for 66.4%; and children who are the only children account for 44.7% [3]. General characteristics of caregivers of children with autism spectrum disorder (Table 1).

old, accounting 0.03%. College and university level of education accounted for the majority of 24.7% and 67.1%, caregivers with a rate of less than level 1 accounted for 0.3%, and 95.7% had a not poor economic status [5]. Only 4.3% haa a poor economic status (Table 2).

Carer characteristics		Frequency (n)	Ratio (%)
Sex	Male	101	33,2
	Female	203	66,8
Age group	<20 years old	1	0,3
	20-35 years old	176	57,9
	>35 years old	127	41,8
Academic level	≤ 1 st grade school	6	2,0
	Middle school	19	6,3
	High school	75	24,7
	College	204	67,1
Home economic	Poor	13	4,3
	Not poor	291	95,7

Table 2. General characteristics of direct caregivers.

The percentage of children with a normal BMI was 75.6%, the rate of overweight and obesity was 23.4%, and the rate of sick children children three times per year was 65.4% (Table 3).

Characteristics		Frequency (n)	Ratio (%)
BMI	Normal	164	75,6
	Malnutrition and overweight, obesity	53	24,4
Frequency of illness in children	≤ 3 times/years	142	65,4
	43 times/years	23	10,6
	53 times/years	14	6,5
	>53 times/years	38	17,5

Table 3. Children's BMI characteristics.

Levels and typical manifestations of children with autism spectrum disorder

Among the 304 children undergoing intervention, 53.3% had severe autism spectrum disorder and almost had normal expression without autism spectrum disorder accounted for 28.6% (Figure 1).



Figure 1. The level of autism spectrum disorder in children according to CARS.

Characteristic manifestations

The percentage of children with defects in the quality of social relations accounted for 86.5%; defects in communication quality accounted for 87.5%; and defects in abnormal behaviors accounted for 85.2% (Table 4).

Characteristics	Frequency (n)	Ratio (%)
Defects in the quality of social relations		
≥ 02 signal	263	86,5
<2 signal	41	13,5
Defects in communication quality		

≥ 01 signal	266	87,5
<1 signal	38	12,5
Defect in abnormal behavior		
≥ 01 signal	259	85,2
<1 signal	45	14,8

Table 4. Defects in the quality of social relations.

Some factors affect the degree of autism spectrum disorder in children

With $p < 0.05$ and 95% CI, it shows that there are statistically significant associations between the average sleep time of children, the child being the only child in the family, family time spent

with the baby, the mother getting sick during pregnancy, children living with people addicted to alcohol, drugs, or stimulants, the child's use of technology and the child's time using technology, and the level of manifestation of the child's autism spectrum disorder (Table 5).

Factors affecting	AS non-disorder		AS disorder		OR (95% CI)	p
	n	%	n	%		
Children's average sleep time						
≥ 10 hours/day	0	0,0	16	7,43	-	0,009
<10 hours/day	87	100,0	201	92,6		
Only child						
≥ 2 children	35	40,2	133	61,3	0,425	0,001
Only child	52	59,8	84	38,7	(0,256-0,707)	
Family time with baby						
Rarely	40	46,0	140	64,5	0,468	0,003
Often	47	54,0	77	35,5	(0,282-0,776)	
Mothers with comorbidities or medical treatment during pregnancy						
Yes	11	12,6	77	35,5	0,263	0,0001
No	76	87,4	140	64,5	(0,132-0,525)	
Living with a person who is addicted to alcohol, drugs, or stimulants						
Yes	2	2,3	25	11,5	2,323	0,011
No	85	97,7	192	88,5	(1,412-4,013)	
Using technology						
Yes	49	56,3	175	80,6	0,309	0,0001
No	38	43,7	42	19,4	(0,18-0,532)	
Time using technology						
≤ 1 hour/day	60	69,0	104	47,9	2,415	0,001
>1 hour/day	27	31,0	113	52,1	(1,426-4,088)	

Table 5. Some factors affecting the degree of autism spectrum disorder in children.

Discussion

General characteristics of the study subjects

The study results showed that the sex ratio of children with autism spectrum disorder was 67.1% male and 32.9% female. This result is

similar to the study of the author, Trinh Quang Dung, with a rate of 65.2% for boys and 34.8% for girls.

However, the male/female ratio is 6.4/1, which is lower than the research of author Nguyen Thi Huong Giang. This could explain the possibility of different sampling subjects and the situation of the sex ratio disparity between men and women. According to our research results, children aged 37-48 months accounted for the highest rate with 36.8%, and the lowest rate was >72 months old with 6.6%. Compared with the study of Trinh Quang Dung, it is not similar, specifically the age range of 13-24 months with 34.8%. But compared to Thanh Ngoc Minh's study, children aged 3 to 4 years old (37-48 months) accounted for the highest rate of 59.6%. In Jon Baio's study, children with ASD symptoms were 7-8 years old. This difference may be due to differences in sampling characteristics between the studies. In our study, it was also discovered that the percentage of children with a sleep time of 10 hours per day accounted for 66.4%; this sleep time did not meet the medical recommendations for sleep; and the percentage of children who are only children accounts for 44.7%, indicating that families are having fewer children carer characteristics [6].

The proportion of female caregivers is 66.8% as women are often the main caregivers for the family. The age group with the highest percentage is 25-35 years old as this is the age of strongest reproduction and the least risk [7,8]. In terms of college education, university or higher accounted for the highest percentage of the total number of subjects participating in the study (67.1%). It is quite important that the proportion of people with a non-poor economy accounts for 95.7%. According to research by Tran Thien Thang on children with autism spectrum disorder, those directly taking care of children also showed similar results in terms of age, gender, education level, and household economy not poor. This can easily explain the population characteristics and the fact that the study area is in the city of Can Tho.

Levels and typical manifestations of children with autism spectrum disorder according to our research results, the level of children with severe autism spectrum disorder accounted for 53.3%; compared with the study of Thanh Ngoc Minh (41.4%), our results are not too different. Our findings are not significantly different from those of Thanh Ngoc Minh (41.4%). However compared to the studies of Tran Thien Thang (72.2%) and Nguyen Thi Huong Giang (85.7%), our results are much lower. This may be due to the subjects selected for our study and these two authors distinguishable [9]. According to our study, the rate of children with ASD who have defects in social relations is 86.5%, communication quality at 87.5%, and abnormal behavior at 85.2%. Compared to the study by Nguyen Thi Huong Giang, these rates are more than 92% higher than our results. In Pham Trung Kien's study, this rate before the intervention reached the absolute value of 100%. Trinh Quang Dung et al. discovered that more than 90% of children have language-communication problems. This can also be explained by the differences in the selection of research subjects among the authors.

Some factors affect the degree of autism spectrum disorder in children

According to our research results, children with less than 10 hours of sleep per day have the ability to affect mental development, and the possibility of an autism spectrum disorder is also higher than for other children who get enough sleep ($p=0.009<0.05$). The results show that

children living in families with many siblings have a 0.425 times lower rate of ASD than children with only one sibling, with $p=0.001<0.05$ 95% CI. Insufficient family time with children will cause them to have a severe autism spectrum disorder 0.468 times more than other children, with $p=0.003<0.05$ 95% CI. Maternal comorbidities or treatment during pregnancy also affect the level of ASD in children ($p=0.0001<0.05$ 95% CI). Families with people who are addicted to alcohol, drugs, or stimulants also have a higher likelihood of ASD than other children ($p=0.011<0.05$). In the study by Anne Case and Christina Paxson, it was found that the impact related to parental behavior will affect the mental health of children. Children with active family intervention at home improve better after intervention. Factors using modern technology such as television, smartphone, etc., and time spent using these technologies 1 hour per day is associated with the degree of ASD, with p ranging from 0.0001 to 0.001 0.05 95% CI. Gastrointestinal (GI) disorders rank among the most common medical conditions associated with autism. Prenatal maternal exposure to fever or inflammatory responses is associated with autism spectrum disorders in children [10-12]. Parental age has potential implications for planning, public health, and investigating the etiology of autism. Compared with the study of Tran Thien Thang, all the above characteristics have no correlation, possibly because the sample sizes of the two studies are not similar.

Conclusion

In the 304 cases studied, 53.3% of children had severe autism spectrum disorder; 86.5% had a disability in social relations; 87.5% had a defect in communication quality; and 85.2% of children had defects in abnormal behaviors. There was a relationship between the average sleep time of children, the child being the only child in the family, family time spent with the baby, a mother's sickness during pregnancy, children living with people addicted to alcohol, drugs, or stimulants, the child's use of technology and the amount of time the child spent using technology, and the level of manifestation of the child's autism spectrum disorder. It is necessary to further strengthen the screening of early signs and risk factors related to autism spectrum disorder in children in order to help them integrate into the community and have the best mental health.

Limitations

Target study subjects: Children aged 18-72 months are too young. As for primary caregivers: due to the survey covering the entire province, including ethnic minorities, these people may have difficulty communicating, which could lead to errors in the actual data collection and survey of disease symptoms in children by primary caregivers who are ethnic minorities.

Ethics Approval and Consent to Participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the ethics committee of the Can Tho university of medicine and pharmacy and with the consent of the school board, the principal, and the star preschool teachers, as well as the director and staff of VT-care. The procedures

performed in this study adhered to the tenets of the declaration of Helsinki (From pre-study protocol approval to implementation monitoring and post-study reporting). All study participants were selected when they agreed and checked the consent section of the research questionnaire, and they had the right to terminate at any time during the study.

Consent for Publication

Please confirm that both authors (DPL and HTTT) have read and reviewed the entire content of the topic and agreed to submit the manuscript to the journal of clinical schizophrenia and related psychoses for publication. This does not include identifying images or other personal or clinical details of participants; all information must be encrypted and kept confidential for the participants.

Availability of Data and Materials

The data and documents checked by the Can Tho university of medicine and pharmacy meet the new requirements for conducting research. The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Competing Interests

The authors declare that they haven't any conflicts of interest.

Funding

There is no funding at all.

Authors' Contributions

DPL and HTTT jointly produced the ideas and the study design and developed the survey tools. HTTT: Write a draft outline, Collect data and put it into SPSS software. Write a draft of the entire research topic. DPL: Check and revise the research outline; process research data. Discussions and recommendations should be in writing. Both authors (DPL and HTTT) read and reviewed the entire content of the topic and agreed to submit the manuscript to the Journal of the clinical schizophrenia and related psychoses for publication.

Acknowledgements

We would like to express our appreciation and gratitude to the patients, who are students and parents, who agree and voluntarily contribute to successful research.

We would like to send our sincerest and deepest thanks to: Teachers and teachers on the school board; the ethics council of Can Tho university of medicine and pharmacy, especially associate professor Dr. Nguyen Trung Kien, Rector of the university, who has helped and supported enthusiastically; the board of directors of the faculty of public health of Can Tho

university of medicine and pharmacy; and our partner, especially Dr. Ho Tinh Thu Trang, who assisted in completing the research.

I would like to express my deep thanks to the school board, the principal, and the Star Preschool teachers, as well as the director and staff of VT-care, who have enthusiastically helped and supported me in the process of doing this research.

Thank you, colleagues, friends, family, relatives, and research institutions, for encouraging and helping me throughout the research process.

Thank you for the kind words and valuable help from everyone.

Ethical Consideration

The study was approved by the ethics council in biomedical research at Can Tho university of medicine and pharmacy and the consensus of the science and technology council of the early childhood schools in Ninh Kien district, Can Tho city (Star 1 kindergarten and GT care center). The study is subject to the consent and voluntary participation of the research subjects. The research content does not affect the rights, prestige, or personalities of the research participants and does not contain information or activities contrary to the customs and ethics of the research community and individuals. During the research, the subjects personal information is collected in encrypted form and is not anonymous. All subject information is kept private, and the results are only used for research purposes.

References

1. Nguyen, Dat Tan, E Pamela Wright, Tam Thi Pham, and Joske Bunders, et al. "Role of school health officers in mental health care for secondary school students in Can Tho City, Vietnam." *School Ment Health* 12 (2020): 801-811.
2. Case, Anne, and Christina Paxson. "Parental behavior and child health." *Health Aff* 21 (2002): 164-178.
3. Pierce, Karen, Cindy Carter, Melanie Weinfeld, and Jamie Desmond, et al. "Detecting, studying, and treating autism early: the one-year well-baby check-up approach." *J Pediatr* 159 (2011): 458-465.
4. Baio, Jon, Lisa Wiggins, Deborah L Christensen, Matthew J Maenner, and Julie Daniels, et al. "Prevalence of autism spectrum disorder among children aged 8 years-autism and developmental disabilities monitoring network, 11 sites, United States, 2014." *MMWR Surveill Summ* 67 (2018): 1.
5. Scottish Intercollegiate Guidelines Network (SIGN). "Assessment, diagnosis and interventions for autism spectrum disorders." (2016).
6. Altschuler, Melody, Georgios Sideridis, Shashwat Kala, and Megan Warshawsky, et al. "Measuring individual differences in cognitive, affective, and spontaneous theory of mind among school-aged children with autism spectrum disorder." *J Autism Dev Disord* 48 (2018): 3945-3957.
7. Speaks, Autism. "Autism and health: A special report." (2017).
8. Lord, Catherine, Mayada Elsabbagh, Gillian Baird, and Jeremy Veenstra-Vanderweele, et al. "Autism spectrum disorder." *Lancet* 392 (2018): 508-520.
9. Chlebowski, Colby, James A Green, Marianne L Barton, and Deborah Fein, et al. "Using the childhood autism rating scale to diagnose autism spectrum disorders." *J Autism Dev Disord* 40 (2010): 787-799.
10. Brucato, Martha, Christine Ladd-Acosta, Mengying Li, and Deanna Caruso, et al. "Prenatal exposure to fever is associated with autism spectrum disorder in the boston birth cohort." *Autism Res* 10 (2017): 1878-1890.

11. Durkin, Maureen S, Matthew J Maenner, Craig J Newschaffer, and Li-Ching Lee, et al. "Advanced parental age and the risk of autism spectrum disorder." *Am J Epidemiol* 168 (2008): 1268-1276.
12. Lamb, Neil E, Kai Yu, John Shaffer, and Eleanor Feingold, et al. "Association between maternal age and meiotic recombination for trisomy 21." *Am J Hum Genet* 76 (2005): 91-99.

How to cite this article: Duong, Lam Phuc and Trang Thu Thi Ho. "The Situation and Factors Related to the Health of Children with Autism Spectrum Disorder in Ninh Kieu District Early Childhood Schools in Cantho City during 2020-2021." *Clin Schizophr Relat Psychoses* 17 (2023).