

Research on the Current Status of Self-Care Abilities of 1st-3rd Grade Students with Autism

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Abstract: This study investigated the current status of self-care abilities in children with autism in the first, second, and third grades. A questionnaire survey was used to investigate the current status of self-care abilities in children with autism attending a special education school in Beijing. The survey covered seven aspects of self-care abilities: drinking, eating, dressing, toilet, hygiene, home life, and safety. Data obtained were analyzed using SPSS to analyze the impact of gender, grade, and the severity of the disorder on self-care abilities. There is no difference in self-care abilities among children with autism across different genders and grades. However, there is a significant difference in self-care abilities among severity of the disorder ($p < 0.001$). For children with autism, especially those were moderate to severe, improving self-care abilities is challenging. In the adaptation education, it is necessary to carry out targeted educational activities based on the severity of the disorder.

1. Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by challenges in social interaction, communication, and repetitive behaviors or interests^[1]. The prevalence of ASD has been on the rise, with recent estimates suggesting that it affects approximately 1 in 54 children in the United States (Centers for Disease Control and Prevention, 2020)^[2]. The disorder is typically diagnosed in early childhood, and its impact on a child's development can be profound, affecting not only their social and communication skills but also their ability to perform daily living tasks.

One critical aspect of development that is often overlooked in the context of ASD is the acquisition of self-care skills. Self-care, also known as activities of daily living (ADLs)^[3], includes essential tasks such as dressing, feeding, bathing, and using the toilet independently. These skills are fundamental to a child's ability to function autonomously and are a significant milestone in early development. For children with ASD, the mastery of self-care skills can be significantly delayed or impeded due to the challenges they face in sensory processing, motor coordination, and social understanding^[4].

The importance of self-care skills extends beyond the immediate benefits of independence and self-efficacy. It is closely linked to a child's overall quality of life. Children who develop these skills early are more likely to have smoother transitions into school and social environments^[5], which can lead to better educational outcomes and social integration. Conversely, delays in self-care skills can contribute to a cycle of dependency and diminished self-esteem, which may exacerbate the challenges

associated with ASD^[6].

There is a growing body of research that highlights the need for early intervention to support the development of self-care skills in children with ASD^[7]. However, the current state of self-care abilities in young children with autism remains a complex and multifaceted issue. Factors such as the severity of the disorder, the presence of co-occurring conditions, and the variability in individual needs can all influence the trajectory of skill acquisition. Additionally, cultural, socioeconomic, and systemic barriers can impact the accessibility and effectiveness of interventions.

The purpose of this research is to investigate the current state of self-care abilities in young children with autism, with a focus on the challenges and facilitators that influence their development. By understanding the factors that contribute to the acquisition of self-care skills, we aim to inform evidence-based practices that can support these children and their families.

2. Methods

2.1. Participants

This study was conducted on 41 hospital-diagnosed autistic students in the first to third grades of a special education school in Beijing. The general information are detailed in Table 1.

Table 1: Participant information

	Classification	Number	Percentage
Grade	1st grade	15	36.6
	2nd grade	13	31.7
	3rd grade	13	31.7
Gender	Male	35	85.4
	Female	6	14.6
Severity of the disorder	Mild	5	12.2
	Moderate	17	41.5
	Severe	19	46.3

2.2. Procedures

2.2.1. Questionnaire

Self-compiled questionnaires were distributed to parents of autistic students in terms of drinking, eating, dressing, toileting, hygiene, home life and safety.

1) The basis and content of the questionnaire

Based on the life skills items from the Chinese Autism Spectrum Disorders Children's Adaptive Behavior Scale and the comprehensive functional assessment of disabled children from existing scales, combined with observations of the self-care abilities required by children with autism in their daily lives during an internship at a special education school, a self-compiled survey questionnaire for the self-care abilities of special children was developed. The questionnaire, in addition to two pieces of personal information - gender and grade level, also includes seven dimensions: drinking, eating, dressing, toilet, personal hygiene, home life, and safety. Specifically, drinking encompasses six questions, eating includes four questions, dressing contains nineteen questions, toilet includes seven questions, hygiene includes ten questions, home life includes eleven questions, and safety includes five questions, totaling sixty-two questions. Each dimension of self-care ability can be completed independently as 1, completed with the help of 2, and unable to complete is marked as 3.

2) Reliability and validity of the questionnaire

Apart from personal information, the survey's reliability analysis was first conducted for all items across each dimension. Then, a separate reliability analysis was performed for each of the seven dimensions.

As shown in Table 2, the overall internal consistency Alpha coefficient for the questionnaire is 0.973. In the SPSS overall reliability analysis of the questionnaire, all Alpha coefficients after the deletion of any item were less than 0.973. The Alpha coefficient for the drinking water dimension is 0.851, for the eating dimension it is 0.734, for the dressing dimension it is 0.935, for the using the toilet dimension it is 0.805, for the personal hygiene dimension it is 0.879, for the home life dimension the Alpha coefficient is 0.875, and for the safety dimension the Alpha coefficient is 0.896, all of which are greater than 0.7, indicating that the questionnaire has good reliability.

Table 2: Reliability analysis results

	Clonbach	Number of items
Drinking	0.851	6
Eating	0.734	4
Dressing	0.935	19
Toilet	0.805	7
Hygiene	0.879	10
Home life	0.875	11
Safety	0.896	5
Total	0.973	62

Exploratory factor analysis was conducted on the items of each dimension of the questionnaire, with the results presented in Table 3. It can be seen that the KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy for the drinking water dimension is 0.819, for the eating dimension it is 0.729, for the dressing dimension it is 0.786, for the using the toilet dimension it is 0.694, for the personal hygiene dimension it is 0.753, for the home life dimension it is 0.818, and for the safety dimension it is 0.713. All dimensions have a significance level of less than 0.001, indicating that the data for each dimension is suitable for factor analysis.

Table 3: Results of validity analysis

	KMO	P
Drinking	0.819	<0.001
Eating	0.729	<0.001
Dressing	0.786	<0.001
Toilet	0.694	<0.001
Hygiene	0.753	<0.001
Home life	0.818	<0.001
Safety	0.713	<0.001

3) Questionnaire collection

Questionnaires were distributed to parents of autistic children 1st to 3rd grades at a special education school. Questionnaire collection: A total of 47 questionnaires were distributed and 41 valid questionnaires were recovered, accounting for 87% of the valid questionnaires.

2.2.2. Mathematical Statistics and Analysis

SPSS27 software was used to statistically analyze the survey data. Reliability analysis was used for questionnaire reliability, exploratory factor analysis was used for questionnaire validity, and nonparametric rank-sum test, Spearman correlation analysis, eta correlation analysis and regression model were used for the differences of different dimensions of questionnaire data.

3. Results

3.1. Comparison of results for students of different grades

Table 4: Comparison of results for students of different grades

	Grade	M(IQR)	H	P
Drinking	1 st	8(7,12)	1.604	0.448
	2 nd	8(6,9)		
	3 rd	6(6,10.5)		
Eating	1 st	7(5,8)	5.150	0.076
	2 nd	5(4,6.5)		
	3 rd	5(4,6.5)		
Dressing	1 st	30(27,38)	1.849	0.397
	2 nd	30(22,36)		
	3 rd	27(23.5,34)		
Toilet	1 st	11(8,12)	1.165	0.559
	2 nd	9(7,11.5)		
	3 rd	9(8,11.5)		
Hygiene	1 st	19(16,22)	5.359	0.069
	2 nd	18(13,19.5)		
	3 rd	16(14,17)		
Home life	1 st	21(16,24)	1.986	0.370
	2 nd	18(16,22.5)		
	3 rd	18(14,19.5)		
Safety	1 st	10(9,14)	3.095	0.213
	2 nd	9(7.5,12.5)		
	3 rd	9(7,10)		
Total	1 st	105(92,129)	3.113	0.211
	2 nd	101(80,110.5)		
	3 rd	92(76.5,106)		

There was no significant difference in self-care ability among children with autism in different grades ($P>0.05$). (Table 4.)

3.2. Comparison of results for students of different genders

Table 5: Comparison of results for students of different genders

	Gender	M(IQR)	H	P
Drinking	M	8(6,11)	-1.150	0.250
	F	7(6,9)		
Eating	M	5(4,7)	-0.322	0.748
	F	5(4,7.25)		
Dressing	M	30(25,37)	-1.589	0.112
	F	25(22.75,29.25)		
Toilet	M	10(8,12)	-0.912	0.362
	F	8.5(7,11.75)		
Hygiene	M	17(15,20)	-1.334	0.182
	F	15.5(12,18.25)		
Home life	M	19(17,24)	-1.536	0.124
	F	16(14,19.25)		
Safety	M	9(8,14)	-0.541	0.588
	F	9(7.75,10.5)		
Total	M	102(86,117)	-1.476	0.140
	F	86.5(77.75,101.75)		

There was no significant difference of different genders ($P>0.05$). (Table 5.)

3.3. Comparison of results for students of severity of the disorder

Table 6: Comparison of results for students of severity of the disorder

	Gender	M(IQR)	H	P
Drinking	Mild	6(6,7)	15.590	P<0.001
	Moderate	7(6,9)		
	Sever	10(8,12)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	0.004	
		Moderate- Sever	0.004	
Eating	Mild	5(4,6)	2.992	0.224
	Moderate	5(4,6.5)		
	Sever	6(4,8)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	P<0.001	
		Moderate- Sever	P<0.001	
Dressing	Mild	21(20.5,23)	23.987	P<0.001
	Moderate	27(23.5,30)		
	Sever	35(31,39)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	P<0.001	
		Moderate- Sever	P<0.001	
Toilet	Mild	7(7,7.5)	15.581	P<0.001
	Moderate	9(8,11)		
	Sever	12(9,14)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	P<0.001	
		Moderate- Sever	0.012	
Hygiene	Mild	14(13,16)	13.693	P=0.001
	Moderate	15(13,18.5)		
	Sever	18(17,23)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	0.003	
		Moderate- Sever	0.002	
Home life	Mild	14(13.5,15.5)	18.188	P<0.001
	Moderate	17(14.5,19.5)		
	Sever	21(18,25)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	P<0.001	
		Moderate- Sever	0.002	
Safety	Mild	6(5.5,8)	20.883	P<0.001
	Moderate	9(7,9)		
	Sever	13(10,15)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	P<0.001	
		Moderate- Sever	P<0.001	
Total	Mild	72(71,82)	24.081	P<0.001
	Moderate	90(79.5,100.5)		
	Sever	112(103,136)		
	Post-hoc	Mild- Moderate		
		Mild- Sever	P<0.001	
		Moderate- Sever	P<0.001	

There were significant differences in toileting, personal hygiene, home life, safety, and self-care ability ($P<0.05$) (Table 6).

4. Discussion

Children with moderate to severe autism spectrum disorder (ASD) often struggle with an array of

developmental challenges, among which are significant difficulties in acquiring self-care abilities and fine motor skills^[8]. These impairments can profoundly affect their daily lives and the lives of their caregivers, as they impact basic functions such as eating, dressing, and engaging in educational activities.

Self-care skills are critical for independence and often serve as a keystone for other developmental areas. They include a wide range of daily activities that many typically developing children learn naturally; however, for children with moderate to severe ASD, these can be daunting tasks. The reasons for these difficulties are multifaceted and can include a combination of sensory sensitivities, cognitive impairments, and motor planning deficits. Sensory processing issues may lead to discomfort or even pain during routine activities such as brushing teeth or hair, bathing, or changing clothes. Cognitive impairments, including executive functioning deficits, can make it challenging for these children to plan, initiate, and complete self-care tasks. Moreover, fine motor skill developmental disorders in children with moderate to severe ASD further compound these challenges^[9]. Fine motor skills are the ability to make movements using the small muscles in our hands and wrists. These skills are essential for tasks such as holding a toothbrush, using utensils, writing, and manipulating buttons or zippers.

Children with ASD may have poor hand-eye coordination, difficulty in grasping and holding objects, and trouble performing tasks that require precision. This can lead to frustration and a reluctance to engage in self-care activities, thereby delaying the development of independence. Intervention strategies for improving self-care abilities and fine motor skills in children with moderate to severe ASD are diverse and need to be individualized^[10]. Occupational therapy (OT) is often central to these interventions, with therapists working to improve sensory integration, motor planning, and the execution of fine motor tasks. Techniques might include sensory diets, which provide structured and meaningful sensory experiences, and task analysis, breaking down complex tasks into smaller, more manageable steps. Additionally, therapists may use adaptive equipment and assistive technologies to facilitate independence in self-care routines.

Applied Behavior Analysis (ABA) is another approach that can be used to teach self-care skills^[11]. ABA involves breaking down skills into small, achievable components and using positive reinforcement to encourage desired behaviors. This method can be particularly effective for children with ASD, as it provides structured learning opportunities and consistent feedback. It is also essential to consider the role of parents and caregivers in supporting the development of self-care abilities and fine motor skills. Home-based strategies can be crucial in reinforcing the skills learned in therapy sessions and providing a supportive environment for practice and mastery^[12]. Parent training and involvement in intervention plans are associated with better outcomes and can empower families to contribute actively to their child's development.

In conclusion, while children with moderate to severe ASD face substantial hurdles in developing self-care abilities and fine motor skills, with tailored and evidence-based interventions, these challenges can be mitigated. It is critical to adopt a collaborative approach that includes therapists, educators, parents, and the children themselves to ensure that each child can reach their full potential in self-care independence and fine motor proficiency. Continued research into effective interventions and strategies is vital to enhance the support provided to these children and their families. --- This analysis provides a snapshot of the complexities surrounding self-care and fine motor skill development in children with moderate to severe ASD. To expand this into a full-length essay, you would need to delve deeper into each aspect, providing more detailed explanations, evidence from research studies, and examples of specific intervention strategies.

5. Conclusions

- 1) The head tilt posture of the students was more serious than that of normal students.
- 2) As students from different age groups grow older, the prevalence of postural abnormalities such as rounded shoulders and chest retraction tends to increase year by year
- 3) There is no gender difference observed in the symptoms of Upper Crossed Syndrome among students from Special Schools.
- 4) The symptoms of forward tilt were the most severe in students with multiple disabilities.

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