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# Nutrition Related Behavior Problems in Autism Spectrum Disorders

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## ABSTRACT

Feeding is an essential function, which affects the life quality of children with autism spectrum disorder (ASD). Approximately, 80% of the ASD patients have some feeding difficulties. This study aimed to determine the prevalence of behavioral feeding problems in ASD. In this cross-sectional descriptive study, 30 individuals with ASD referred to speech and language pathology clinic were included using random sampling. To gather the data, Screening Tool of feeding Problems (STEP) was used. Data analysis was done through SPSS. The findings of the study indicated that all subjects were somehow involved with behavioral feeding problems. Findings indicate that in autism children, behavioral feeding problems were prevalent. These problems will be treated by opportune identification.

**Key words:** Nutrition, Behavioral problems, Autism spectrum disorder, Screening Tool of feeding Problems.

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## 1. INTRODUCTION

Pediatric feeding problems are indicated if a child's eating behavior interferes with adequate nutritional intake such as weight gain, health, and development are com-promised or if a child demonstrates severely maladaptive and disruptive mealtime behaviors. Feeding disorders can manifest as a food refusal, defined as the rejection of food, often to the extent that an individual consumes fewer than the number of calories necessary for weight gain and linear growth (1). Feeding problems can also present as food over-selectivity, defined as choosing only a limited number of foods to be consumed or consuming an inadequate variety of foods, which can also lead to inadequate nutritional intake (2). Additionally, children with feeding problems often demonstrate disruptive behaviors during mealtimes that interfere with food consumption and adequate nutritional intake, such as crying, screaming, or otherwise agitated behavior, aggressive and self-injurious behavior and disruptive

behavior (e.g., spitting out food, leaving the table, knocking food off of the table) (3). It has been reported that clinically significant feeding disorders occur in approximately 30% of children with developmental disabilities (4). Despite these prevalence rates, few studies have focused on the prevalence and characteristics of feeding problems within specific diagnostic categories of developmental disabilities. The results of studies in Iran show a high prevalence of feeding problems, approximately more than 80% in children with ID (5-7). Autism is one of the areas where little research has been done regarding feeding problems, although many of its inherent characteristics suggest that children with autism are at risk for feeding problems. For example, some research suggests that children with autism frequently present with gastrointestinal difficulties find to be associated with the development of feeding problems, such as constipation, vomiting, and food allergies (8). However, more recent reviews have disputed this claim, finding no differences in the prevalence of symptoms of gastrointestinal disorders between children with autism and

typically developing children (9). Additionally, preliminary research has suggested correlations between particular enzyme and amino-acid deficiencies and the behavioral features of autistic disorder. These findings are limited and systematic and well-controlled studies have not replicated these findings (10, 11). It has also been suggested that children with autism demonstrate sensory preferences and difficulty with motor control. These sensitivities may lead children to restrict their intake to food of preferred, tolerable, and manageable textures (3). Alternatively, behavioral difficulties associated with autistic disorder may disrupt typical feeding development. For example, children with autism may be unable to adequately communicate their nutritional wants and needs, such as hunger, fullness, food likes and dislikes, or discomfort around eating, or they may not be influenced by their caregivers' attitude towards healthy eating in the same way as children without such communication deficits. In addition, rigid and repetitive behavior patterns are characteristic of autistic disorder, and this preference for sameness could lead to extreme restrictions in the types of food consumed (12). Difficulties with social interactions are also characteristic of children with autism and the subsequent lack of age-appropriate social exchanges and opportunities to model appropriate mealtime behavior may make it difficult for a child with autism to learn behaviors such as the proper use of utensils and self-feeding skills. The interaction among these factors can make it difficult for a child to maintain a nutritionally adequate diet. Few studies have systematically explored the nature of feeding problems and nutrition consumption in children with autism (13). With regard to behavioral difficulties displayed by children with autism, available research findings suggest that children with autism may present with more mealtime behavioral issues than their typically developing peers and siblings. Specific mealtime behavior problems indicated in the literature include food cravings, food refusal, limited variety, specificity in presentation of foods (e.g., specific brands or packaging, specific utensils), grazing, disruptive mealtime behaviors, and texture specificity (13). Ledford and Gast reported that between 46% and 89% of children with autism spectrum disorder (ASD) exhibit, selective acceptance of food or refusal to eat many or most foods with no known medical explanation (14). The most commonly reported and researched feeding problem in children with ASD is food selectivity (12), the insistence on eating a narrow range of foods (15, 16). Children may be selective by food type, temperature, texture, brand, and even color of food. Less commonly reported problems in those with ASD include liquid avoidance, packing (i.e. retaining food in the mouth for protracted durations) and rapid eating (i.e. eating at a pace that does not allow for appropriate chewing and swallowing). Although there are ranges of feeding problems among children with ASD, the assessment of these specific feeding problems has received little study. This study aimed to determine the behavioral feeding

problems in children with ASD.

## 2. MATERIALS AND METHODS

In this cross-sectional descriptive study, 30 individuals with autism referred to speech and language pathology clinic of Hamadan University of Medical Sciences and Health Services were recruited using random sampling. Autism was diagnosed according to the DSM\_IV\_TR criteria and then confirmed by the psychiatrists. Intelligence tests (e.g., Stanford–Binet IV). To gather the data-screening test for feeding problems was used. To gather the data, feeding problem questionnaire was used as well as a demographic questionnaire, which contains gender, age, height, weight and BMI. To diagnose feeding problems in participants, we applied The Screening Tool of feeding Problems (STEP). The STEP is a 23-item feeding problem-screening instrument for persons with intellectual disability. The informant was instructed to respond the items along two dimensions, frequency and severity. Each dimension can be rated on a 3-point Likert-type scale. On the frequency dimension, “0” indicates no occurrence of the behavior in the last month, “1” indicates the behavior occurred once to 10 times, and “2” indicate the behavior has occurred more than 10 times. For the severity dimension, “0,” suggests that the behavior does not cause harm or any problems, “1” presents the behavior causes some problems and/or results in harm, and “2” shows that the behavior causes serious problems and/or injury. The general categories of feeding problems included aspiration risk, selectivity, feeding skills, food refusal related behavior problems, and nutrition-related behavior problems.

The obtained data from the questionnaires were initially analyzed by descriptive statistics. Data analysis was conducted using the statistical package for the social sciences (SPSS) version 15.

## 3. RESULTS AND DISCUSSION

The number of participants was 30 (twenty-one male, nine female) ranging from three to 11 years old. Total feeding difficulties for individuals were measured by the sum of responses to the 23-STEP items (with scores ranging from zero to 46). The findings of the study indicated that 66.66% of subjects were involved with behavioral feeding. The results also showed that food stealing (53.33%) is most prevalent and continuing to eat as long as food is available (26.66%) are of less prevalence among the subjects (Table 1).

Table 1. Percentage of Behavioral Feeding Problem in Children with ASD

Problem	Severity		
	Without	Moderate	Severe

Steals or attempts to steal food from others during mealtime	46.66	53.33	0.00
Eats or attempts to eat items that are not food	66.66	26.66	6.66
Will continue to eat as long as food is available	73.33	26.66	0.00
teals or attempts to steal food outside of mealtime	66.66	20.00	13.33
Total (behavioral feeding problems)	33.33	53.33	13.33

Proper feeding behaviors are important to have a healthy lifestyle (13). Feeding problems are serious clinical problems that complicate the management of children with ASD (14). The results of the current study show a high prevalence of feeding problems in children with ASD. Other studies report feeding problems in about 80% of children with ASD (12). The present results suggest a higher prevalence of feeding problems in children with ID. This is consistent with the study of Matson (11). Similar to other problem behaviors in ASD, the etiologies of feeding problems are usually discussed as either medical or environmental (e.g., esophageal reflux and food refusing as medical and environmental, respectively). The most prevalent feeding problems found in this study were in the area of feeding skills, including, inability to feed him/her independently, requiring special equipment for feeding, and requiring special positioning during feeding. This finding is similar to Matson (11). Feeding skill disorders include items, which are motor oriented, may derive from sensory motor difficulties affected by sensory modulation, muscle tone, coordination and endurance that influence the ability in timing and accuracy of the mouth movements, or from sensory-motor disabilities that affect control of the food in the mouth. Indeed, the literature suggests that children with ASD often present difficulties in their motor skills that are affected by their general severe brain damage, lack of motivation to develop motor learning, and decreased heart activity (10). The lack of motor experiences may also result in further motor limitations (9). In this instance, being male and more severely intellectually disabled further increases the ASD person's risk for feeding problems. This result should be taken into account in the planning of clinical services, particularly with respect to feeding issues.

#### 4. CONCLUSION

Findings indicate that in autism children, behavioral feeding problems were prevalent. These problems will be treated by opportune identification. Intervention services may not only affect the quality of life of autism people, but may also have a potential to prevent further eating problems. This study may therefore have great implications for the places where clinicians can direct

efforts and preventative care. It is importance that all children with ASD will be assessed for feeding problems, and these problems will be treated by opportune identification. Intervention services may not only affect the quality of life of those with ASD, but may also have a potential to prevent further eating problems, and direct impact on the physical and emotional wellness of those with ASD.

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#### AUTHORS CONTRIBUTION

This work was carried out in collaboration between all authors.

#### CONFLICT OF INTEREST

The authors declared no potential conflicts of interests with respect to the authorship and/or publication of this article.

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