Chapter 11
The Impact of Sensory Processing and Behavioral Factors on Food Selectivity in Children With Autism Spectrum Disorders (ASD): Multidisciplinary Approaches for Intervention

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ABSTRACT

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition often accompanied by food selectivity, characterized by restricted food intake, strong preferences, and aversions, affecting over 70% of children with ASD. Sensory sensitivities, behavioral rigidity, and gastrointestinal issues are key contributors, often

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leading to nutritional deficiencies, poor growth, and stress for caregivers. This chapter explores multi-disciplinary approaches, combining behavioral therapy, sensory modulation, and technology-enhanced interventions like virtual reality, AI-driven tools, and wearable devices to personalize treatments. A thorough assessment of sensory, behavioral, and medical factors is critical for effective, evidence-based interventions. Leveraging conventional and technological methods, this chapter highlights strategies to improve dietary diversity, reduce family stress, and enhance overall well-being for children with ASD.

INTRODUCTION

According to DSM-5, children with (ASD) constitute a broad category of neurodevelopmental disorders and are characterized by deficits of socio-emotional reciprocity, deficits of social communication aimed at social interaction, deficits in the development, maintenance, and understanding of relationships, repetitive patterns of movement or speech, use of objects, rigidity in routines, limited repertoire interests disproportionate in intensity and focus, and hypersensitivity or hyposensitivity to sensory stimuli. It is noteworthy that symptoms become apparent during early childhood development and intensify when social demands exceed the capabilities of the individual. In addition, the characteristics mentioned above can coexist with comorbidities such as language disorders, hyperactivity, anxiety, challenging behaviors, food selectivity, and sensory responses under hypersensitivity to sensory stimuli. These deficits are multifaceted and affect a person's functionality in social, professional, and other areas of life (Hossain et al., 2020).

Autism spectrum disorder (ASD) is a neurodevelopmental condition with a globally increasing prevalence. While the rise in ASD diagnoses can be partially attributed to the broadening of diagnostic criteria and heightened awareness, the interaction between genetic susceptibility and contemporary environmental exposures is thought to contribute to a genuine increase in incidence. A substantial body of evidence underscores the critical role of prenatal exposures. Maternal infections during pregnancy, gestational diabetes, and obesity are well-established risk factors for ASD. The prevalence of ASD has been increasing in recent years, affecting about 1 in 150 children (Love et al., 2024).

Dietary selectivity in children with ASD is defined as a persistent preference for or avoidance of certain foods based on texture, temperature, taste, color, shape, smell, and variety. These individuals often display an increased preference for specific sensory characteristics, such as particular textures and odors, while demonstrating marked aversion to or refusal to engage with novel or strongly aversive foods. This phenomenon is frequently referred to as “picky eating.” The limited range of foods consumed by individuals with ASD often results in inadequate intake of essential nutrients, including vitamins and trace elements, which can lead to nutritional deficiencies, exacerbate medical complications, and delay developmental progress. Such consequences can negatively impact both the child’s quality of life and that of their caregivers.

Selective eating behaviors in ASD are further characterized by food neophobia, resistance to dietary changes, rigid mealtime rituals, and an intense fixation on a narrow selection of foods. These behaviors are commonly associated with hypersensitivity to sensory stimuli, including food texture, taste, and smell, which may stem from sensory integration deficits frequently observed in ASD. Feeding difficulties are often compounded by communication impairments, which limit the individual’s ability to articulate food-related discomfort or preferences, thereby reinforcing restrictive dietary patterns and perpetuating nutritional imbalances. This sensory processing challenge is hypothesized to stem from variations in