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Original Article

Development of an intervention programme for selective eating in children with autism spectrum disorder

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Autism spectrum disorder;
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Summary *Objective/Background:* Most parents of children with autism spectrum disorder (ASD) have difficulties with the selective eating behaviour of their children. This study aimed to develop a newly designed intervention programme on improving selective eating behaviour for parents of children with ASD and evaluate its effectiveness.
Methods: The participants were 23 parents of children (aged 3–6 years) with ASD. The education programme included a session that addressed approaches to improve selective eating and attitudes at meal times, with a discussion. The intervention aimed to identify the underlying factors and approaches to improve selective eating in children and the self-efficacy of parents.
Results: Significant differences were observed before and after the intervention in the degree of difficulty perceived by parents, their degree of self-efficacy, the number of recommendations conducted by them, their subjective view of the degree of dietary imbalance, and the number of food items consumed by their children.
Conclusion: We developed an interventional programme for parents of children with ASD and this programme was found to be useful. It is important for occupational therapists to consider

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the factors and approaches for selective eating in children with ASD in order to provide early intervention for their parents.

Introduction

The Centers for Disease Control and Prevention (CDC) estimated that one in 68 children among multiple communities in the United States has autism spectrum disorder (ASD). This new estimate is approximately 30% higher than previous estimates of 2012 (Wingate et al., 2014). In Japan, it is estimated that prevalence rate of autism in children up to 5 years of age was 3.5% (Kamio, Kawamata, Nakai, & Mishima, 2015). According to DSM-5, ASD is a lifelong neurodevelopmental disorder characterised by impaired social communication combined with restrictive and repetitive patterns of behaviour and interest. Impairments in sensory processing are also very common (American Psychiatric Association, 2013).

Parents of children with ASD report that they have difficulties with the daily activities, behaviours, and communication abilities of their children. The other concerns that parents often express involve the eating habits of their children during meals (Bicer & Alsaffar, 2013; Williams, Dalrymple, & Neal, 2000), and this can create stress in the household (Anderson, Must, Curtin, & Bandini, 2012; Rogers, Magill-Evans, & Rempel, 2012). Moreover, children with ASD are often highly selective eaters with very limited food acceptance (Cermak, Curtin, & Bandini, 2010).

In fact, an estimated 58%—67% of parents of children with ASD experience the selective eating behaviours of their children in countries such as Japan (Bicer & Alsaffar, 2013; Kerwin, Eicher, & Gelsinger, 2005; Tateyama, Miyajima, & Shimizu, 2013; Williams et al., 2000). Several studies have compared dietary variety among children with ASD, those with normal cognitive development, and those with other developmental disabilities, and these studies concluded that the dietary variety is lower in children with ASD and that these children are more likely to refuse food (Bandini et al., 2010; Marshall, Hill, Ziviani, & Dodrill, 2013; Williams, Hendy, & Knecht, 2008; Zimmer et al., 2012). Early childhood is the period when children experience new foods, tastes, and textures. Young children who consistently refuse to eat or to try a variety of foods are frequently described as 'picky eaters' by their parents (Legge, 2002; Tomchek & Dunn, 2007; Twachtman-Reilly, Amaral, & Zebrowski, 2008). Although selective eating is not uncommon in young children with normal development, selective eating in children with ASD may extend beyond the early childhood period. Selective eating patterns are five times more likely in children with ASD than in children with typical neurological development (Sharp et al., 2013). Selective eating tends to be more pronounced, start earlier, and extend over a longer period in children with ASD than in other children. In our pre-study investigation, more than 80% of the parents of young children with ASD reported that selective eating resulted in parental difficulties (Miyajima, Tateyama, Hirao, Nakaoka, & Higaki, 2014).

Food selectivity can become a significant problem because it can be associated with inadequate nutrition owing to the limited nutritional intake of a restricted diet (Cornish, 1998; Dovey, Staples, Gibson, & Halford, 2008; Herndon, DiGuiseppi, Johnson, Leiferman, & Reynolds, 2009; Lockner, Crowe, & Skipper, 2008; Raiten & Massaro, 1986; Schmitt, Heiss, & Campbell, 2008; Williams et al., 2000). Several studies have reported that children with ASD may be at greater risk for nutritional deficits as a result of limited dietary variety; however, these findings are not conclusive (Emond, Emmett, Steer, & Golding, 2010; Hyman et al., 2012; Zimmer et al., 2012). Food selectivity is a frequent problem in children with ASD, and the child's unusual eating patterns can significantly stress the family (Groden et al., 2001; Legee, 2002). If children have selective eating patterns, their parents often do not know how to deal with the situation, and this easily results in stress. Most parents of children who have poor eating habits tend to have lower self-efficacy because of stress and the daily loss of confidence. Therefore, it is important to understand the self-efficacy of parents, as this might help improve a child's food acceptance (Miyajima, Tateyama, Hirao, Nakaoka, & Higaki, 2016).

In response to this problem, researchers have recognised the need for assessment and treatment of selective eating (Johnson et al., 2014; Kral, Erikson, Souders, & Pinto-Martin, 2013; Sharp et al., 2013). Cermak et al. (2010) discussed the need for parents to understand food selectivity and the importance to address the needs of children with ASD who demonstrate substantial food selectivity, because feeding problems are complex and often multifaceted. To solve the problem of selective eating in children with ASD, it is important to gain a deeper understanding of the various factors that contribute to food selectivity and address them in order to develop holistic interventions for this problem (Tanner et al., 2015).

A number of explanations for food selectivity have been proposed (Whiteley, Rodgers, & Shattock, 2000). Among these, Williams et al. (2000) stated that the most likely factors to influence food selectivity reported by parents were food texture (69%), appearance (58%), taste (45%), smell (36%), and temperature (22%). In the literature, feeding problems have been associated with various factors, including repetitive behaviour, anxiety, and sensory reactivity (Johnson et al., 2014).

Therefore, in our pilot study involving an interview and questionnaire survey, we investigated not only the factors of food preferences but also the approaches for selective eating in children with ASD. We focused more on why these children preferred rather than on why they disliked certain food. We wanted to use the term "food preferences" rather