

## Autism Spectrum Disorder and Obesity: A Unique Challenge

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### ABSTRACT

Obesity is a significant problem in children and adolescents with autism spectrum disorder. Understanding that individuals with autism spectrum disorder may have different predisposing factors to weight gain compared to their neurotypical peers is important for those involved in their care and treatment. These factors include medication related weight gain, behaviour management using food to re-enforce positive behaviours, restrictive eating patterns and sensory processing differences.

Effectively addressing weight gain in individuals with autism spectrum disorder requires a person specific approach and significant involvement of parents and carers. Parents, carers, and clinicians need to be willing to examine and potentially change their practice to overcome autism specific drivers of obesity.

### KEYWORDS

Autism, Obesity, Children, Adolescents, Weight gain.

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### Introduction

Autism spectrum disorder (ASD) is a developmental disorder characterised by deficits in communication, social skills, and rigidity of thought [1]. The World Health Organisation estimates that the global prevalence of ASD is one in 270 people [2].

Obesity is a significant problem in all children and adolescents. There were over 340 million young people aged 5-19 classified as overweight or obese in 2016 [3]. However, the obesity crisis is even worse in those with ASD. A metanalysis, that included over a million individuals with ASD, found that the prevalence of obesity was significantly higher in those with ASD than in controls [4]. In a study of 9600 adolescents aged 12-17 the prevalence of obesity in those with autism was 31.8% compared to 13.1% in those without developmental disabilities [5].

There are a wide range of estimates for the prevalence of obesity in young people with ASD in different studies. Most of these estimates demonstrate a prevalence of obesity in this population that is equal to or greater than the equivalent general population [6,7]. A study demonstrated that parent-reported severity of autism correlated with an increase in the risk of obesity and a decrease in participation in physical activity [8].

Multiple studies have shown that overweight children are more likely to become overweight adults [9]. This puts them at risk of diabetes, heart disease, and premature death amongst other complications.

There are factors increasing the risk of obesity that affect those with autism more than the general population. It is important for carers and clinicians to understand these in order to address obesity in

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young people with autism spectrum disorder.

### Medication related weight gain

A metanalysis showed that 1 in 6 young people with autism spectrum disorder received antipsychotic medication [10]. Antipsychotic medication use has been shown to cause significant weight gain in children and adolescents [11].

Risperidone and aripiprazole have the best evidence base for treating irritability associated with autism spectrum disorder [12]. Risperidone has been shown to increase appetite, weight, and waist circumference in children with autism spectrum disorder. In a 24-week randomised control trial, the group taking risperidone went from 60.8% of participants having a normal weight to only 29.4% during the trial [13]. In a different study of children with autism, Risperidone was shown to increase appetite in a third of participants [12]. Similar studies have demonstrated significant weight gain in young people taking Aripiprazole for irritability associated with ASD compared with a placebo [11,14,15].

### Behaviour management

Many young people with ASD require additional behaviour management strategies compared to their peers [1]. Often parents and carers use food as a reward to reinforce positive behaviours. Others may use food to distract and placate the child's challenging behaviour. This can have a significant effect on the child's overall food intake [12] and change their relationship with food.

This is an under researched area and does not feature in much of the literature on this subject. Clinical observation in care and educational settings demonstrated that this may be having a significant effect on the weight of young people with ASD.

### Restrictive eating patterns

Studies looking at the eating habits of children with autism showed that most parents reported that their child was a picky eater and was reluctant to try new foods. However, nearly three quarters of the parents surveyed stated that their child had a good appetite for foods that they liked [16]. Restrictive diets in children with ASD are often focussed onto energy dense foods [17]. This can dramatically increase an individual's energy intake. Eating energy dense foods to satisfy their hunger drive will likely end up exceeding their calorie requirements.

### Sensory processing

One study showed that as many as 90% of children with autism spectrum disorder have sensory abnormalities [18,19]. Research and clinical observations have shown that food selectivity in children with ASD is often related to sensory sensitivity [17].

Food selectivity can take many forms. This can result in a diet comprising of a narrow selection of foods based on texture, temperature, taste groups or insisting on condiments on all meals [20]. As well as providing a challenge to carers to ensure that the individual meets their nutritional requirements, it can also

dramatically increase sugar, fat, or calories of seemingly appropriate meal portions.

Sensory sensitivity can sometimes manifest as desires and urges to chew, drink, swallow and eat regardless of hunger. This can go to the extreme of Pica behaviour where individuals will consume non-food items [21]. This drive to eat can dramatically increase the calorie intake of an individual and lead to obesity.

### Proposed solutions

Metformin has been shown to be effective in reducing weight gain associated with atypical antipsychotic use and is well tolerated in young people with ASD [22]. Notably in an extension of a randomised control trial, metformin was shown to be effective at maintaining the previous improvements in weight [23].

To reduce the use of food as part of managing behaviour it is important to give parents and carers access to support and education in behaviour management. This can widen the tools at their disposal. Understanding the potential downsides and health concerns of the over-use of food to re-enforce positive behaviour will help those working with children with challenging behaviour to be more selective in using it.

When working with young people with restrictive diets, it is helpful to understand the reasoning behind the restriction. This allows one to experiment and potentially widen the range of foods that the individual finds acceptable. Combining this with an understanding of the energy required for the individual will promote better overall control of intake. It is possible to modify meals, including fast food, to reduce calorie density and promote satiety [24].

Clinical counselling and education have been found to be more effective in family-based groups for the treatment of obesity compared to individual based treatments [25]. Parent based weight loss treatment where the parent attended classes in nutrition, physical activity, behaviour changes and parenting strategies have been shown to improve weight loss in children with ASD [26].

It is important for clinicians to remember that the parents and carers of a child will understand their behaviours, abilities and how the child may be different in more familiar settings. As such they are an invaluable resource for assessment, planning and enacting interventions.

### Key takeaway points

Obesity is a significant problem in children and adolescents with autism spectrum disorder.

Understanding that individuals with ASD may have different predisposing factors to weight gain compared to their neurotypical peers is important for those involved in their care and treatment. Effectively addressing weight gain in individuals with ASD requires a person specific approach and significant involvement of parents and carers.

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