

Autism Diet and Nutrition: How Does it Affect Autism Health?



Autism Parenting
Magazine

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Although there is no conclusive evidence that diet can improve symptoms of autism, many parents and caregivers of children with autism are using nutrition to modify and manage some behaviors that come with being on the spectrum.

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Before learning about popular autism diet options for your child, it's important to understand how nutrition plays a part in autism. While nutrition or special diets do not cure autism, there have been reports indicating the positive effects of a modified diet.

What is the connection of diet to overall autism health?

Children with autism often have sensory challenges. As a result, they can have specific food aversions that prevent them from getting the number of nutrients they need to be healthy. If your child is a picky eater, you might find that introducing healthier food options can sometimes be next to impossible.

More research and extensive studies have been recommended to prove the connection between autism, diet, and behavior. The autism research community has not ruled out the possibility that diet can affect symptoms of autism, nor have they reached a definite stance on the issue.

Can Diet Treat Autism?

The consensus of health experts state that there is no significant evidence to prove that diet can cure autism. However, several bodies of research have found that while diets do not treat autism symptoms, they can alleviate some issues related to autism, such as gastrointestinal dysfunction and poor gut health.

Autism and gastrointestinal issues: What causes GI problems in autism?

In a [study](#) published in 2014, gastrointestinal dysfunction was present in 49 percent of 164 children with ASD. Additionally, 22 percent showed signs of diarrhea, and 26 percent had constipation.

The findings confirm what many parents of children with ASD have long suspected: autism and gastrointestinal issues are connected.

Gastrointestinal dysfunction or GID refers to diseases that occur in the gastrointestinal tract. Some of these conditions include:

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- **Constipation** – is a condition where there are difficulty and irregularity of bowel movements. Symptoms include a bloated or distended stomach and pain when experiencing a bowel movement.
- **Vomiting** – throwing up can be a symptom of a bacterial or viral infection, but it can also be caused by food allergies, migraines, and other underlying medical conditions.
- **Diarrhea** – is a condition that involves watery stools and the urgent need to go to the toilet. Beyond viral causes, diarrhea is a symptom of celiac and Crohn's disease.
- **Crohn's disease** – is a chronic bowel disease that inflames the gastrointestinal tract anywhere between the mouth and the anus. The cause is unknown, but **studies** have suggested a link to the immune system.
- **Lactose intolerance** – is the inability to digest lactose, a sugar found in animal milk (cow, goat, and sheep), and can be brought about by Crohn's or celiac disease. People who are lactose intolerant experience bloating, stomach pain, nausea, or diarrhea within a few minutes of consuming lactose.
- **Irritable Bowel Syndrome (IBS)** – defined as the “abdominal discomfort associated with altered bowel habits,” the symptoms are often sudden, persistent, and irregular bowel movements that can either be constipation-predominant or diarrhea-predominant.
- **Gastroesophageal Reflux Disease (GERD)** – also known as heartburn or acid reflux, this condition is caused by a weak esophageal sphincter which makes partially digested food go back up the esophagus.
- **Celiac disease** – is an autoimmune disorder triggered by the protein gluten. Many parents of children with ASD have found that **excluding gluten** from their child's diet improved symptoms as a response to the protein can damage the villi (the small, finger-like projections in the small intestine), which interferes with absorption and can lead to other health problems.

It is essential to determine the underlying causes of GI symptoms and whether they can be treated or resolved by adjusting food habits or applying special diets. Ultimately, parents are advised to consult the child's physician and report relevant diet, digestion, and bowel movement issues that might affect moods and behavior associated with autism.

Autism gut health: Studies on the microbiome and its effects on ASD

A [new study](#) revealed that a healthy gut microbiome, which consists of different bacteria that live in the intestines, can affect and ease symptoms of autism. It suggests that autism and gut health are linked and that opting for a healthy diet can have benefits for children with autism.

The study revealed that children on the spectrum have a lower level of healthy gut bacteria compared to their neurotypical peers. Two specific bacteria called Bifidobacteria and Prevotella were found to be missing in the microbiota of children with ASD.

The children in the study underwent microbiota transfer therapy (MTT), wherein healthy gut bacteria were introduced to their systems. Rosa Krajmalnik-Brown, a professor at Arizona State University and the author of the study, said, “We treated children with autism by altering the gut microbiota. All had gastrointestinal symptoms — diarrhea, constipation, stomach pain — and those symptoms were reduced dramatically, and their behavior improved as well.”

After two years, the study produced children with healthier gut bacteria and fewer symptoms of gastrointestinal problems. [Dr. Thomas Brody](#), who pioneered the MTT, has called the study “the highest improvement in a cohort anyone has achieved for autism symptoms.”

Sleep and gastrointestinal problems in autism

Statistically, [research](#) estimates that between 44 and 86 percent of children with ASD experience sleep disorders. This number is significantly higher than the 10 to 16 percent of children in the general population. It takes an average of 11 minutes longer for children with autism to fall asleep compared to neurotypical children.

There is [evidence](#) that sleep and GI dysfunction are linked in children with autism. Sleep disorders are common in children on the spectrum. This includes refusing to go to bed, insomnia, abnormal breathing during sleep, problems waking up, and difficulty staying awake during the day.

A study conducted in 2015 by Poland’s Medical University of Białystok discovered that GI disorders are possibly caused by sleep problems in children with autism. Children with sleep problems and on the spectrum were compared to their neurotypical peers. The study concluded that “Children with ASD and GI symptoms have been found to have a higher prevalence of sleep disturbances compared with typically developing peers who do not have GI symptoms.”

To alleviate sleep difficulties connected with gastrointestinal issues, [Sleephelp.org](#) recommends the following:

- Avoid food that irritates or upsets the child's stomach a few hours before bedtime
- Limit liquid intake before bed to avoid bedwetting
- Avoid caffeine (this includes tea, chocolate, and soda)
- Provide exercise or intense physical activities during the day
- Melatonin supplements are known to promote sleep (ask your child's physician first)

Beneficial autism diet for your child

Despite the [lack of evidence](#) that a particular diet improves symptoms of autism, many parents opt for trying specific food regimens they believe will help. While these diets are not scientific, the response from parents proves otherwise.

Exclusion diets are popular in parents that administer specific autism diets to their children. These diets involve reducing or removing food that is considered harmful to a person's health. Some examples of exclusion diets are:

- Gluten-free
- Casein-free
- Salicylate-free
- Yeast-free

Autism diet risks & benefits

As far as nutrition goes, there are a few types of diet that can benefit children with autism. However, it is essential to note that going on a specific diet carries some risks along with the benefits.

Avoiding certain foods can limit a child's intake of nutrients needed to be healthy and achieve optimal growth. For instance, a casein-free diet which eliminates milk products can affect your child's bone health. That's why it is in your child's best interest to consult a physician or nutrition expert before changing a diet.

Special diets/nutrition/vitamins to help ease autism symptoms

Diet does not cure autism – that is a fact. However, there is also no known adverse effects of specific diets that are believed to worsen symptoms of autism.

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Let's review some well-known diets developed for specific dietary needs and conditions. Keep in mind that benefits are not guaranteed for every child on the spectrum.

The ketogenic diet for autism

The ketogenic or keto diet is a popular diet that involves reducing carbohydrates and replacing them with fat. The body is then forced to use fat as an energy source which results in a faster metabolic state called ketosis. The keto diet was first used to treat patients with epilepsy, which is a condition present in some children with autism.

A small [study](#) suggested the possibility that a modified ketogenic diet is beneficial for people with autism. The study was done in 15 children ages two to 17 years old for three months. The children went under a modified ketogenic diet with supplemental MCT (medium chain triglycerides). MCT is a dietary supplement that contributes to weight loss and lowering inflammation.

The study concluded that: "Components of the KD are possibly beneficial in improving social effect in children with ASD. Additional studies are needed to understand how the KD improves behavior."

To go on a keto diet, you need to avoid foods high in carbohydrates. Meats, high-fat dairy, low-carb vegetables (spinach, kale, broccoli), nuts and seeds, avocado, and artificial sweeteners are the main staple in this diet. These foods are not allowed in a keto diet:

- Grains (wheat, rice, pasta, corn, etc.)
- Sugar (table sugar, soda, honey, agave, maple syrup, etc.)
- Fruits (apples, bananas, oranges, etc.)
- Tubers (potatoes, yams, etc.)

Gluten-free diet for autism/casein-free diet for autism

The [gluten-free and casein-free diet](#), also known as the GFCF diet, is gaining popularity in the autism community. The positive response from parents and advocates is always a source of discussion and debate. Studies and research findings are conflicting, as [one study](#) claims this diet has no positive benefits, while [another](#) suggests improvement of autism symptoms with this diet.

The GFCF diet involves eliminating gluten (found in wheat, barley, and rye) and casein (found in milk and dairy products) from the child's everyday food intake. Some parents go with this diet due to food allergies, while others believe it alleviates autism symptoms.

The theory behind this diet states that peptides and protein found in gluten and casein contain opiate-like chemicals that can cause a person to react and behave differently. This chemical reaction can exacerbate symptoms for children with ASD.

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The GFCF diet is believed to reduce symptoms and improve social and cognitive behaviors and speech in children with autism. In a [2012 study](#) conducted by Penn State's Human Development and Family Studies department, parents reported that a gluten-free and casein-free diet improved autism behaviors in their children who also exhibited gastrointestinal dysfunction. Children in the GFCF diet were said to achieve better language production, eye contact, attention span, and social responsiveness.

Foods to avoid in a GFCF diet are:

- Milk and dairy products (cheese, ice cream, yogurt, etc.)
- Bread, pastries, and most cereals (not labeled gluten-free)

What you can eat in a gluten-free casein-free diet:

- Chicken, fish, meat
- Fruits, vegetables
- Potatoes, rice, infant rice cereal
- Cereal and pasta labeled "gluten-free"

To counter the absence of milk products, parents often choose alternative dairy products such as plant-based milk (almond milk, rice milk, soy milk) for children without nut and soy allergies. As for the absence of gluten, parents opt for gluten-free options that are now widely available in almost all food items.

GAPS diet for autism

GAPS, which stands for Gut and Psychology Syndrome, is a term coined by nutritionist [Dr. Natasha Campbell-McBride](#) who also created the GAPS diet.

The diet requires eliminating grains, pasteurized dairy, starchy vegetables, and refined carbs from a person's daily food intake. It is geared towards people with neurological conditions such as autism.

The GAPS diet was developed under the theory of leaky gut syndrome. A leaky gut, to put, is a condition wherein undigested food particles leak to the bloodstream because of a damaged lining in the small intestine. When this happens, Dr. Campbell-McBride believes it affects brain function and can cause neurological disorders like autism, ADD, ADHD, dyslexia, depression, schizophrenia, and bipolar disorder.

Symptoms of a leaky gut include:

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- **Chronic diarrhea, constipation, gas or bloating**
- **Poor immune system**
- **Headaches**
- **Hazy memory and poor brain function**
- **Tiredness**
- **Skin problems (acne, rashes, rosacea)**
- **Craving for sweets and carbohydrate-rich foods**
- **Arthritis and joint pain**

The GAPS diet has a very specific meal plan separated into two stages: introduction phase and full diet phase. There is a meal plan to be followed, and it involves gradually introducing new foods in the introductory phase until you are ready to implement the full GAPS diet.

The GAPS diet involves consuming a significant amount of bone broth, hormone-free and grass-fed meat, fish, shellfish, animal fats, eggs, fresh fruits and non-starchy vegetables, kefir, hard cheese, coconut milk, nuts, and white beans.

Foods to avoid in the GAPS diet include:

- **Sugar and artificial sweeteners**
- **Syrups**
- **Alcohol**
- **Processed and packaged foods**
- **Grains such as rice, corn, wheat, and oats**
- **Starchy vegetables, such as potatoes and yams**
- **Milk**
- **Beans, except white and greens beans**
- **Coffee**
- **Strong tea**
- **Soy**

The GAPS website promotes supplements to go with the diet. Specifically, it recommends its brand of probiotics for autism, as well as fish and cod liver oil.

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There is no scientific evidence that the GAPS diet is effective in treating autism. In addition, health experts criticize the diet because of its long list of foods that are not allowed, which might be impossible to implement with a picky eater. More importantly, the restriction in certain food groups might cause malnutrition in children.

The GAPS diet is also [viewed](#) by some health professionals as a marketing scheme to sell books, DVDs, and supplements rather than treat conditions like autism. Parents and caregivers are advised to take caution when considering this approach.



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Paleo diet and autism

The paleo diet is taken from the dietary habits of our ancestors during the Paleolithic Age. During this time, humans hunted and consumed meat and fruits. Agriculture was not yet invented, so grains were absent in this diet. Following this concept, a paleo diet involves eating whole foods and avoiding processed foods.

In a paleo diet, you can eat meat, fish, eggs, vegetables, fruits, nuts, seeds, herbs, spices, healthy fats, and oils. Some people use alternate grain products like corn, breadcrumbs, tortillas, and edamame.

Foods to avoid in a paleo diet include:

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- All grains like rice, corn, millet, wheat, rye, oat, barley
- Legumes (peanuts, beans, lentils, tofu)
- Refined sugar
- Dairy products
- Processed foods
- Soda & sweetened beverages
- Refined vegetable oils
- Salt
- Artificial sweeteners

In a way, a paleo diet has similar benefits to a GFCF diet as they both eliminate gluten and dairy from the menu. Paleo advocates claim that a paleo diet contributes to lowering gastrointestinal issues in children with autism.

In fact, [Karen Pendergrass](#), founder of Paleo Foundation, believes paleo diet can work even better than a GFCF diet because the paleo diet eliminates gluten replacements like corn, millet, and sorghum, which are found in products labeled as gluten-free.

There is no scientific evidence that a paleo diet has positive effects on autism. However, this diet is child-friendly as it does not eliminate meat, allowing for more options even for picky eaters.

When going on the paleo diet, it's important to understand the nutrients that would be missing when eliminating grains and dairy from a child's daily meals. Grains are good sources of fiber, while dairy provides protein and calcium.

Yeast-free diet for autism

Children with autism are believed to be prone to yeast overgrowth in the gut. Yeast coexists with bacteria in the gut. Yeast overgrowth is believed to be caused by the use of antibiotics—usually, while a mother is pregnant with a child.

Certain [research](#) has been done to support the theory that children with autism who were exposed to antibiotics while in their mother's womb tend to develop yeast overgrowth during and after birth. Mothers who have altered gut flora or microbiome can pass the same biological properties to their babies during pregnancy, delivery, and breastfeeding. The child's microbiome, when inheriting yeast overgrowth, can cause biochemical changes that affect brain development.

To counter the effects of yeast overgrowth, some parents take on an alternative therapy called yeast overgrowth management. The therapy involves the use of probiotics, which are micro-organisms that promote good bacteria in the gut and reduce yeast overgrowth. As a result, children who undergo the therapy will have improved gut microbiome, and this is believed to positively affect brain development.

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Some details about yeast overgrowth management include:

- Adding probiotics agents such as acidophilus and lactobacillus to the diet to restore balanced bacteria in the gut
- Limiting sugar and yeast in food consumption
- Using foods with antifungal properties like garlic, grapefruit, and seed extracts to eliminate yeast in the gut

There is little research conducted on this diet, so parents and caregivers should consult a health professional when considering this diet.

Specific carbohydrate diet for autism (SCD autism)

The **SCD diet** is one of the many diets that show supporting good digestive health can provide multiple benefits. It is a grain-free, low-sugar, and low-lactose diet developed by Dr. Sidney Haas in 1920 to treat celiac disease. It has been known to reduce the symptoms of Inflammatory Bowel Disease (IBD).

The SCD diet aims to aide digestion and prevent gastrointestinal problems by avoiding most grains rich in carbohydrates, which are harder to digest. This approach also reduces inflammation in the gut and helps people with GI disorders like Irritable Bowel Syndrome, Crohn's disease, and celiac disease.

Foods that are **not allowed** in the SCD diet include:

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- **Sugars:** lactose, sucrose, high-fructose corn syrup, fructose, molasses, maltose, isomaltose, fructooligosaccharides, and any processed sugar
- **All canned vegetables**
- **All grains:** anything made from corn, wheat, wheat germ, barley, oats, rye, rice, buckwheat, soy, spelt, and amaranth
- **Some legumes:** chickpeas, bean sprouts, soybeans, mung beans, fava beans, and garbanzo beans
- **Starchy vegetables:** potatoes, yam, parsnips, seaweed products, agar, and carrageenan
- **Canned and processed meats**
- **Dairy:** milk, milk products, ice cream, whey powder, commercial yogurt, heavy cream, buttermilk, sour cream, and the following cheeses: ricotta, mozzarella, cottage cheese, cream cheese, feta, processed cheeses, and cheese spreads
- **Canola oil, commercial mayonnaise, commercial ketchup, margarine, baking powder, and balsamic vinegar**
- **Candy, chocolate, carob**

Foods allowed on the SCD diet are fresh vegetables, legumes, unprocessed meats, poultry, fish, eggs, natural cheese, nuts, oils (olive, coconut, soybean, and corn), mild tea and coffee, homemade yogurt, natural fruit juices, mustard, vinegar, and saccharin.

There is no medical evidence or research that proves the effectivity of SCD in autism, although many have reported remission from GI disorders. Little information is available as to whether it helps with autism symptoms.

Feingold diet and autism

The Low Salicylate Diet or Feingold diet is a food elimination program created by Dr. Ben F. Feingold to treat hyperactivity. It eliminates salicylates from food sources like artificial colors, artificial flavors, aspartame, and certain petroleum-based preservatives.

Salicylates are natural plant toxins found in berries, citrus fruits (except lemon), some vegetables, honey, yeast extract, and almonds.

Researchers found that some people with ASD are unable to digest and process salicylates and are considered salicylate intolerant. People who do not process salicylates well are seen to exhibit attention problems, hyperactivity, mood swings, and anxiety.

Foods not allowed in the Feingold diet are:

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- artificial colorings, such as red 40 and blue 2
- artificial flavorings, such as synthetic vanilla or peppermint
- artificial sweeteners, including: aspartame, sucralose, saccharin
- preservatives, such as: butylated hydroxytoluene (BHT), butylated hydroxyanisole (BHA), tert-Butylhydroquinone (TBHQ)
- foods containing salicylates

The complete list of foods that are allowed in the Feingold diet are on [its website](#). Some of these are bananas, beans, bean sprouts, beets, cabbage, cauliflower, dates, grapefruit, honeydew, kale, kiwi, lemons, lentils, lettuce, mangoes, mushrooms, onions, spinach, squash, pineapples, and sweet potatoes.

Critics have often pointed out that following a Feingold diet is extremely difficult, as most food products contain additives and salicylates. Parents and caregivers who choose to follow the Feingold diet are most likely going to make their food from scratch.

The Feingold diet has had many [studies](#) and research done over the years, but not one of them have definite proof that the diet works. Despite this, parents and caregivers who followed the diet are adamant that it works for their children with ADHD.

In an article discussing the Feingold diet, [Harvard Health](#) concluded: “For now, the consensus on a sensible approach to nutrition for children with ADHD is the same recommended for all children: eat a diet that emphasizes fruits and vegetables, whole grains, healthful unsaturated fats, and good sources of protein.”

What nutrients are linked to helping the symptoms of autism?

As seen in the many types of diets, there are ways to lessen or eliminate food and nutrients that are known to trigger symptoms of autism. But what about adding or incorporating specific food and nutrients into a child’s diet to help autism symptoms?

In an [article](#) published by *Fox News*, holistic health counselor Jacqueline Banks recommended providing food that contains anti-inflammatory properties to maintain a healthy gut. This includes fatty fish, such as salmon, which is rich in omega-3 fatty acids, as well as walnuts and flax seeds.

When it comes to the meats and animal products, Banks says grass-fed or pastured is better as it provides higher nutrients and does not contain harmful hormones and chemicals. Fruits and vegetables should also be organic and should be cleaned thoroughly. Natural fruit juices or smoothies are also an easier way to add more nutrients to your child’s diet.

Some more recommended food items that help autism symptoms include:

- **Prebiotic-rich foods** (apples, asparagus, leeks, garlic, onions, bananas, and chicory root)
- **Probiotic-rich foods** (yogurt, kefir, and cultured vegetables like kimchi)
- **B6-containing foods** (chicken, pork, turkey, wholegrain cereals, fish, vegetables, soya beans)

Vitamins and supplements for autism

Introducing new food that contains healthy nutrients to children with ASD can be a challenge. Because of this, some parents choose vitamins and supplements as an easier alternative.

Research revealed that over 30 percent of parents give their children vitamins C and B6, and 25 percent give essential fatty acids and magnesium. A small 10 percent give vitamin A, mega-vitamin therapy, DMG (dimethylglycine), and L-glutamine.

The use of regular multivitamins is acceptable for children with ASD. However, children's specific dietary intake and vitamin deficiencies vary, so parents need to know which ones their child needs.

Vitamin C promotes immune function and is an antioxidant. Children on the spectrum can also suffer from "oxidative stress," which is an imbalance of free radicals and antioxidants in the body that can lead to cell and tissue damage. Vitamin C can reduce oxidative stress by stopping the chain reaction in its tracks. A **small study** also revealed that vitamin C could regulate dopamine and therefore influence the brain function that results in reduced repetitive behavior.

Essential fatty acids or omega-3 are crucial for brain function. They also help modulate the immune system. Since these nutrients help brain development and function, children with ASD can benefit from omega-3 supplements. Also, **some studies** found that children with autism have low levels of omega-3, which is linked to some autism symptoms like aggression and impulsiveness.

Strategies for dealing with selective eating

Many parents experience challenges serving meals their child will eat. Parents deal with different feeding issues for children with autism (sensory challenges, gastrointestinal problems, picky eating) and can sometimes have a hard time meeting their child's dietary needs. Special diets can be challenging for parents of children with autism to implement.

Unfortunately, there aren't any special diets for picky eaters. However, you can try some of these strategies to deal with feeding problems in children with autism:

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- Make food visually appealing to your child. Add creative touches to your child's meal plate to create a positive experience, especially when introducing new foods.
- Offer food once or twice a day. Don't give up at the first try. Repeated offering of food to your child can help him/her get used to the idea of eating it.
- Put food nearby. Some children might want to build familiarity with a new food item first before trying it out. To help your child "ease" into the new food, place it near your child's plate and ask him/her to hand it over to you.
- Alternate bites of familiar vs. unfamiliar food. Use a favorite food your child likes and alternate it with small bites of the new, unfamiliar food. For example: "First pizza, then broccoli, then pizza."
- Use **social stories** as they can help motivate a child to try something new, including food.

Ultimately, the best approach to feeding your child would be to find a compromise between giving what your child needs and adjusting it to what your child prefers. While diet will not cure your child, you can always use diet to reduce diet-related problems and improve your child's overall health.

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