



## **Diet and ADHD – An Overview**

Parents and carers of children with ADHD often want to know what kind of diet is most likely to help their child. We know that the food our children eat can affect their health. In the short term, the food we eat affects our teeth, weight and immune system for example. In the long term the food we eat can affect our risk of heart disease, cancer, strokes and osteoporosis. In addition, the food we eat can also affect the way that our brain works. This means that diet can influence our mood, behaviour and ability to concentrate.

There are many anecdotal reports from parents of the effect of various diets on children with ADHD. Unfortunately, scientific research in this area is very limited. Also, diet is a very complex area with different reactions in different individuals. It would be wrong to overstate the case for diet. Many children with ADHD have diets which are typical of other children, and sometimes healthier.

Nonetheless, there are a number of dietary measures that make a certain amount of common sense in some cases. Important issues to consider include fruit and vegetable intake, fatty and sugary foods, dietary sources of Zinc and Iron, intolerance to food additives, intolerance to natural ingredients and the use of omega 3 supplements. Getting these areas of diet right, will help with physical health and development, and may help mood, behaviour and concentration in some cases.

NHS Highland produces information sheets on Iron, Zinc, Food Additives and omega 3 supplements in relation to ADHD. This information sheet describes each area only briefly in order to give the reader an overview of the potential role of diet as part of ADHD management.

### **Fruit and vegetables**

Children and adults are encouraged to include at least 5 handfuls of fruit and vegetables a day. On average, children in Scotland consume 2 to 3 portions, with some consuming much less.

Fruit and vegetables provide with vitamins, antioxidants, minerals and fibre. This combination reduces our risk of heart disease and diet related cancers. It is not clear how important fruit and vegetables are for helping our brains work properly.

We do not know whether they have a specific role in helping children with ADHD. However, it would be wrong to think about diet without considering such a basic and essential aspect of “healthy eating”. Also, the kinds of vitamins (eg: vitamins C and E) provided by these foods play important roles in the absorption and metabolism of other nutrients like Iron and essential fatty acids, both of which are important for mood, behaviour and concentration.

In addition, antioxidants play a role in maintaining the health of all parts of our body. There is no reason to think that the brain is an exception to this. So while eating “5 a day” is very likely to improve our physical health, it may also help our mental health.

## **Fatty and sugary foods**

We know that a diet based on lots of sugar and fat increases our risk of diet related diseases. Sugary foods cause tooth decay, too much saturated fat contributes to heart disease risk, and a high fat, high sugar diet has been linked with increasing obesity rates. Some of these foods are also sources of food additives and salt. Many of these foods that are high in sugar and fat have relatively few vitamins and minerals.

Limiting the consumption of fatty and sugary foods is likely to have a positive effect on general health. In addition, the act of restricting these foods may also have the effect of reducing the intake of food additives and increasing the consumption of vitamins, minerals and fibre (from other foods). This, in turn, could help some children with ADHD.

However, there is not much evidence that fatty and sugary foods contribute directly to symptoms of ADHD specifically. It is more likely that children’s concentration will worsen if their blood sugar levels are too low. There is some evidence that children who have no breakfast or a very small breakfast may not be as attentive to their school work late morning, as children who have had a proper breakfast. Also, if the breakfast provides energy that is released slowly, attention may be better late morning than if the breakfast provides only quick release energy from refined low fibre carbohydrate based foods.

Many children have white toast with jam, or sugary breakfast cereal for breakfast. This is better than nothing, but the best breakfast is likely to be one that provides more than just refined carbohydrate. If fat, protein and / or fibre are provided too, the energy is likely to be released more slowly leading to better attention at school later on. It may help therefore to include one of the following egg or sardines (fat and protein) wholemeal or multigrain bread (fibre), high fibre cereal or fruit (fibre), or milk or yoghurt (protein). Also, there is evidence that poor attention late morning, caused by an inadequate breakfast, can be improved by eating a mid-morning snack.

Most of these research findings relate to primary school children whose brains may utilise blood glucose during demanding work, more quickly than pre-school or high school pupils. These principles probably apply to meals at other times of the day too. It’s just that the research has not been done yet. The best advice therefore is to eat regular meals, include all the different food groups, and make sure you include some fibre. All of these things should help ensure that attention is as good as it can be.

## **Iron and Zinc**

Both iron and zinc are two important minerals that have been linked with brain function. Some research has implicated a deficiency in these minerals in ADHD. Poor dietary intakes of iron and zinc are relatively common. It is sensible to ensure that iron and zinc rich foods are consumed regularly. Advice on iron and zinc is covered more fully in the zinc and ADHD and the iron and ADHD information sheets.

## **Intolerance to Food Additives**

Anecdotally, parents of children with or without ADHD often describe how drinks or sweets containing food additives, affect behaviour. Several recent well designed studies have increased our understanding in this area. Children's behaviour can be affected by some food additives even if they do not have ADHD. It is reasonable to assume that some children with ADHD will be more, rather than less vulnerable to the effects of food additives. However, there is no need to avoid all "E numbers". Our Food Additives information sheet will help you learn which ones to look out for.

## **Intolerance to natural substances in food**

Some children are intolerant to certain "natural" foods. This intolerance will produce different symptoms in different individuals. Symptoms sometimes include asthma, eczema, abdominal pain, diarrhoea, constipation, or a change in mood or behaviour.

If a food additive causes a change in mood it can be safely avoided. The problem with intolerance to natural substances in foods is that removing the offending foods can sometimes make the diet deficient in something important.

Food intolerances can occur to almost any food. Most common anecdotes refer to wheat, milk products, oranges and a variety of other fruit and vegetables. The problem is that excluding wheat can reduce a child's fibre intake, excluding milk products could compromise calcium, magnesium, B vitamin and protein intake, excluding fruits and vegetables can compromise vitamin and fibre intake.

On the other hand, any of these foods can be removed safely from the diet, provided alternative sources of nutrients are put in their place. "Exclusion diets" (other than food additives) are better done under expert supervision so that the potential benefits and risks can be balanced. Further information on "Gluten and casein free" diets for children with "Autistic Spectrum Disorder" is available as a separate information sheet.

## **Omega 3 fatty acids**

There has been considerable interest in the potential benefit of "omega 3 fatty acids" for children with ADHD or other "neuro-developmental disorders". There is no doubt that omega 3 fatty acids are essential part of our diet, and they may help keep our hearts healthy. In addition, it is also clear that most of us do not have enough of these essential fats in our diet. We have evolved on a diet that is rich in omega 3 fats and they play a particularly important role in brain cell membranes.

Omega 3 supplements have been used in research trials to treat mood disorders, ADHD and developmental co-ordination disorder with mixed results. Once again, anecdotally, some families are convinced of their value, and others have found no positive effect. Oily fish and fish oils supplements are the best sources of these fats. This is covered in detail in another information sheet called "Fish oil supplements for children with ADHD or ASD".

In summary, some children with ADHD may benefit from changes to their diet and some may not. For those who are affected by diet, food additives, Iron, Zinc, essential fatty acids and

food intolerances could all play a role. However, precise dietary changes that would be best for each individual child are not easily identified. In any case, implementing some of the changes is always without financial cost or practical difficulty. The more significant the changes, the more likely it is that the child will benefit from expert supervision from a Dietitian.

This information sheet will be updated if and when more research is published. In the meantime, we hope it gives you enough information to understand what “healthy eating” might mean for a child with ADHD. We have tried not to overstate the case for diet, or to deny its likely role. We have an open mind regarding the potential role of diet in the management of ADHD. If you are able to keep an open mind, you may be able to make some dietary changes that help your child.

Further Information: For more information, ask your community paediatrician or visit the Children in Highland Information Point Plus (CHIP +) at the Birnie Child Development Centre. They have copies of the information sheets on omega 3 supplements, Iron, Zinc, and Food additives.

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