

Patient information from the BMJ Group

Weight problems in children

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Weight problems in children

It can be upsetting to hear that your child weighs more than is healthy. But it's a problem that's facing more and more children. To give your child the best chance of a healthy, happy life, you'll want to help him or her to stay at a healthy weight. Treatment programmes can help children with weight problems to reach a healthier weight.

We've brought together the best research about weight problems in children and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments work for your child.

When is a child overweight?

If your child is overweight, it means they weigh more than is healthy. It happens when a child eats more calories than their body is using up as energy.

Children who are overweight may feel unhappy about themselves and are at risk of serious health problems in the long term. But there are treatments that can help. These treatments work best if the whole family is involved.

Key points for parents

- Children who are overweight are at risk of getting serious health problems in later life.
- Children who are overweight are more likely to be bullied, feel bad about themselves, and enjoy life less than other children.
- Treatment is usually aimed at keeping the child's weight steady for 6 to 12 months as he or she grows in height, rather than for the child to quickly lose weight.
- Treatment programmes involving the whole family work better than programmes just aimed at the child.
- Simple things, like reducing the amount of time the family spends watching TV or avoiding sugary soft drinks, can make a difference.

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The whole family can become involved in helping children lose weight.

What's a healthy weight for children?

Because children are constantly growing, it's difficult to say exactly what weight a child should be at a certain age. Doctors use figures that show how their weight and height compares with other children.

Most doctors use the **body mass index** (BMI for short) to work out whether someone's at a healthy weight. Your BMI is a single number that's worked out from your height and weight.

There's no single healthy BMI for a child. That's because children grow at different rates throughout their childhood. Children's BMI is high in the first year, when they put on a lot of weight. Their BMI goes down for the next few years, and then up again at about age 6. ^[1]

Doctors use charts to compare a child's BMI against the average, at different ages. The UK charts are based on historical figures, showing the range of BMIs of British children in 1990.

How the body uses food

Food gives you energy. The amount of energy in food is measured in **calories** (short for kilocalories, or kcal).

Your body needs energy all the time, especially for moving and keeping warm. Different people need different amounts of energy. The amount of energy you need depends on your **metabolic rate**. And the more active you are, the more energy you use.

Children also need energy to grow healthy bones, to develop bigger brains and other organs, and to reach full size and maturity.

Your brain helps you stay a healthy weight. It helps to balance how much you eat with how much energy you burn. ^[2] Your brain sends out 'hungry' or 'full' signals that make

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you want to eat or stop eating. But in some people, these signals don't work as well, or people learn to ignore them.^[3]

When is a child overweight (and what causes it)?

When doctors talk about children being overweight (or **obese**, if they are very overweight), they mean their BMI is much higher than other children of the same age and sex.

It's more than just having a few pounds of 'puppy fat'. Children who are overweight are also likely to feel bad about themselves and may have problems with their behaviour. And being overweight can put children at serious risk of health problems.^[4]

The reasons why children become overweight are usually the same as the reasons why adults become overweight. An overweight child is regularly eating more calories than their body is using up as energy.^[5]

Most very overweight children regularly eat about 40 percent more energy than they use up.^[6] The body stores the extra calories as fat.

There are lots of possible reasons why a child eats more calories than he or she uses up. These include:^[7]

- The rate at which the child's body burns up calories (metabolic rate)
- The child's diet
- How much exercise he or she takes
- How big an appetite the child has.

But isn't it all 'in the genes'?

Some parents think their child must be overweight for other reasons: for example, because of their genes. It's true that a child's genes can put him or her at risk of being overweight.

That means their genes encourage them to eat more calories than they use up, and to store these calories as fat. We don't know which children have these genes, as there aren't any tests to tell us.

But still, it's important to bear in mind that a child can only become overweight by eating more calories than their body needs for energy in daily activities.^[8]

Research shows that children now are more likely to become overweight than in the past. This increase in the numbers of overweight children has happened too quickly for it to have been caused by a change in children's genes. It's more likely to have been caused by a change in the way children live in the modern world.^[7] ^[9]

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Because high-calorie food is easily available and people take less physical exercise, people with these genes are more likely to end up overweight than they were in the past.

Even if your child's genes make him or her more likely to become overweight, you can still help him or her to eat healthily, take exercise, and aim to stay at a healthy weight.

[10]

But of course that doesn't make it easy. Researchers now say that children in most western countries are growing up in an **obesogenic environment**. This means the world children live in makes it much easier for them to become overweight.

There are lots of pressures that make it hard to avoid putting on too much weight.

- If you live in a city and don't have a garden, your child may not have somewhere safe to run around and play outside.
- If you work full-time, it's hard to find time to cook healthy meals. It's tempting to fall back on fast food that may be high in calories.
- If your child lives more than a couple of miles from school, they're more likely to go to school by car or bus, rather than walk or cycle.
- Sugary, fatty food is cheap and plentiful, and children enjoy it. It's hard to deny your children something they like, which doesn't cost too much money.

There are some [medical conditions](#) and [medicines](#) that can make you put on weight. Some conditions make you more hungry. Other conditions slow down your metabolic rate. And some of these conditions affect your hormones.

If your child has one of these conditions, he or she may find it more difficult to keep a healthy weight. It's important to get medical help.

Obesity: why my child?

Doctors don't know exactly why some children become overweight and others don't.

But some things make it more likely that a child will become overweight. These are called **risk factors**. Having one or more risk factors doesn't mean a child will definitely become overweight. But it makes it more likely.

These are some of the common risk factors for children becoming overweight.

- Having at least one parent who is overweight or obese. This is one of the most important risk factors for children becoming overweight. [12] [13]
- Having a high birth weight. [14]
- Putting on weight very quickly as a baby. [14]

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- Having a 'difficult' temperament as a baby (crying and fussing a lot).^[12]
- Having genes that encourage a child to eat more calories than he or she uses in energy.^{[8] [10]}
- Not getting enough sleep. Children under 10 years old who get less than 8 hours of sleep a day are almost twice as likely to become overweight.^[15]

Some studies also show that eating fast food more than twice a week, or drinking a lot of sugary soft drinks, increases the chances of becoming overweight.^{[12] [16]}

Research shows that the amount of time children spend watching television increases their chances of being overweight. This could be because watching television doesn't involve any exercise. But it could also be because children tend to eat snacks in front of the television, and they may also see lots of advertisements for junk food and snacks. This kind of advertising could possibly influence the decisions your child makes about what kinds of food he or she would like to eat.

How can I tell if my child is overweight?

Doctors don't say a child is overweight just based on how they look, or how much they weigh.

These things don't tell us enough to be sure that a child's weight is not healthy.^[17]

But if your child seems overweight compared with other children the same age, it may be worth seeing your doctor for advice. Another sign might be if your child needs to wear clothes whose size is labelled for a much older child. Children who are overweight may be much bigger around the waist than other children.

Children are often very sensitive about their weight. Overweight children are often teased at school and they may feel bad about the way they look. If your child is unhappy and you think there's a possibility he or she might be overweight, ask your doctor for advice.

You might be shocked to be told that your child's weight is unhealthy, and you might feel angry or guilty. But parents often don't realise that their child is overweight.^[18]

There are lots of reasons for this. Children grow at different rates, and a parent may think a child is just going through a growth spurt, or has put on a bit of 'puppy fat'. Also, if the child's school friends or relatives are also overweight, parents may think their child's weight is normal compared with those around them.

How does my doctor diagnose if my child is overweight?

Here are some things your doctor might do to help work out if your child is at a healthy weight or not.

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Questions your doctor might ask

Here are some of the things your child's doctor might ask. ^[28]

- Whether you or your child think your child is at a healthy weight for their height and age.
- Whether you or your child want to change your child's weight.
- Whether your child has any other health problems: for example, snoring, or breathing problems like asthma.
- How your child feels about his or her weight, and whether he or she is teased or bullied because of it.
- Whether other people in your family have had difficulty keeping to a healthy weight.
- About the food you and your family eat, and how you eat (for example, at shared family meals, or separately in front of the television).
- About the amount of activity or exercise your family takes.
- Any other factors that could make it harder for your child to be a healthy weight.
- Whether your child has reached puberty, and whether he or she has stopped growing in height.

Physical examination

Your child's doctor should measure your child's height and weight. He or she should then work out your child's **body mass index** (BMI). Because children grow at different rates through their childhood, the doctor will then compare this figure to growth charts for boys and girls at different ages. ^[28]

Doctors in the UK use the 1990 BMI charts. These charts show the range of heights and weights of children of both sexes and at all ages, measured in 1990. Doctors use them to work out how your child's BMI compares with that of the average child of his or her age and sex.

Your doctor will then be able to say whether your child is overweight, or at risk of becoming overweight. Some doctors might say a child is **obese**. This means they are very overweight, compared with other children who are the same age and sex.

The doctor shouldn't base their diagnosis just on how your child looks, or how much he or she weighs. These things don't tell us enough to know if a child is at a healthy weight. ^[17]

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Tests your doctor might order

Your doctor probably won't order any tests at this stage.

Seeing a specialist

If your child is very overweight, or if he or she had other illnesses or disabilities, your GP may suggest your child sees a specialist.^[28]

This should be a doctor who specialises in treating children (a paediatrician) and who has experience of treating overweight children.

If you see a specialist, he or she will ask about your child's other illnesses. The specialist will assess your child's health to see if their weight is causing any other health problems.

Your child will also probably have some tests. These are likely to be:^[28]

- Blood pressure
- Blood tests to check cholesterol levels
- Blood tests to check insulin and glucose levels
- Tests to check hormone levels.

These tests should help the specialist work out whether your child is at increased risk of illnesses like type 2 diabetes or heart disease. The tests will also show if your child has hormone problems that might be causing their weight problems.

How common is it for children to be overweight?

It's not easy to say exactly how common it is for children to be overweight. That's because different researchers measuring this sometimes use different cut-off measurements to say when a child is at risk of being overweight or obese.

But we do know that the problem is getting more common. Compared with the 1990 figures, which the UK charts are based on, more children are falling into the categories of being overweight, or at risk of becoming overweight.^[19]

UK figures from 2012 estimated that 14 in every 100 boys and girls aged between 2 and 15 were very overweight (obese).^[20]

There has been a lot of discussion about why children are getting more overweight. We don't know the answers for sure, but here are some possibilities.

- Children may be less active than they were in years gone by. They may spend more time watching television or playing video games, and may be driven to school instead of walking or cycling.

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- Children may eat more energy-dense foods. These are foods like biscuits, sweets, crisps, or sugary drinks, which have a lot of fat or sugar, compared with their size. It's easy to eat too much of this type of food because it tastes nice but doesn't fill you up.

The modern world makes it easy for children to eat a lot of energy-dense food, and harder to be physically active. When food was more expensive, and junk food and high-calorie snacks were less available, it was harder to over-eat. And when most people didn't have cars, computers, or television, children needed to be more active to get about and amuse themselves.

For example, fewer children now walk to school than they did 10 years ago.^[21] This might be because their parents are concerned about dangers like traffic, or because children live further away from schools. It may also be because parents no longer have time to walk children to school, because of their own work commitments.

What treatments work for children who are overweight?

Children who are overweight may feel unhappy about themselves, and are at risk of serious health problems in the long term. But there are treatments that can help. They work best if the whole family is involved.

Key messages about helping children reach a healthy weight

- Doctors usually aim for children to keep their weight steady and not put more weight on, rather than losing weight.
- The best treatment programmes for children help them to eat better and exercise more, and to change to healthier habits.
- Programmes involving the child's family work best.
- Medicines and surgery are very rarely used for overweight children.

The National Institute for Health and Care Excellence (NICE), which advises the government on health care, has published advice for how doctors should treat children who are overweight. To find out more, see <http://www.nice.org.uk/guidance/CG43> .

There are some things that parents themselves can do to help their children reach a healthy weight. There isn't much research to show whether these things work, but some doctors recommend them. To find out more, see [What can I do to help my child reach a healthy weight?](#)

Which treatments work best to help children reach a healthy weight? We've looked at the best research and given a rating for each treatment according to how well it works.

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We've used the terms your doctor may use and given simple explanations. For help in deciding what treatment is best for your child, see [How to make the best decisions about treatment](#).

Treatment Group 1

Treatments to help children reach a healthy weight

Treatments that are likely to work

- [Programmes that include diet, exercise, and changing habits](#) : These are often called multi-disciplinary programmes. [More...](#)

Treatments that need further study

- [Bariatric surgery](#) : This is very rarely used for children who are overweight. [More...](#)

Other treatments

We haven't looked at the research on these treatments in the same detail we have for the other treatments we cover. (To read more, see [Our method](#).) But we've included some information because you may be interested in them.

- [Medicines](#) : These are very rarely used for children who are overweight. [More...](#)

What will happen to my child?

Being overweight can make a child feel unhappy. It also puts them at risk of health problems, both now and in the future. That's why it's important to help your child get to a healthy weight.

How a child feels

Children who weigh more than is healthy often feel bad about themselves. They may have problems with making friends, and they may be teased or bullied.^[1] Treatments can help them feel better about themselves.^[8]

Health problems

Studies show that some overweight children already have other health problems, including [high blood pressure](#) , [high cholesterol](#) , and problems with the way their body controls blood sugar levels (insulin resistance). This can happen to children as young as 10.^[4]

About 3 in 10 children who are very overweight also have a condition called metabolic syndrome.^[17] This is a combination of symptoms that mean they may be more at risk of getting type 2 diabetes. To find out more, read [Metabolic syndrome](#) .

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Overweight children are also more likely to have diseases like **asthma** and type 1 diabetes, although we don't know if being overweight causes these diseases. Children with asthma might become overweight because they do less exercise than other children. ^[4]

Adulthood

Not all children who are overweight grow up to be overweight adults. But overweight children are more likely to grow into being overweight adults than other children.

Some studies show that between 5 in 10 and 8 in 10 teenagers who are overweight will become overweight or **obese** as adults. ^{[8] [22]}

Future health issues

If children grow into being very overweight adults, this can increase their chances of having one or more serious health problems. These problems include **diabetes**, high blood pressure, **heart disease** and **stroke**, osteoarthritis, and some types of cancer. That's why it's important to help your child get to a healthy weight. ^{[1] [23] [24]}

Studies show that overweight children can lose weight through treatment programmes. But, as with adults who lose weight, children may struggle to stay at a healthy weight after the programme has finished. ^[25]

Questions to ask your doctor

If you think your child is overweight, you may want to talk to your doctor to find out more. Here are some questions you may wish to ask:

- Why do you think my child is overweight?
- How does my child's weight compare with other children who are the same age and sex?
- Why has my child become overweight?
- Could it be because of another medical condition, or because of medicines my child is taking?
- Does my child need to lose weight?
- Does my child have any health problems caused by his or her weight?
- What will happen if my child doesn't have treatment?
- How can you help my child to reach a healthy weight?

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- What changes can my family make to help my child reach and stay at a healthy weight?
 - How can I change my child's diet without spending a lot of money or upsetting my child?
 - How can my child take more exercise without spending a lot of money?
 - Could putting my child on a diet lead to eating disorders?
-

Treatments:

Programmes that include diet, exercise, and changing habits

In this section

[Do they work?](#)

[What are they?](#)

[How can they help?](#)

[How do they work?](#)

[Can they be harmful?](#)

[How good is the research on programmes that include diet, exercise, and changing habits?](#)

This information is for parents of children with weight problems. It tells you about weight-loss programmes that include diet, exercise, and a change in habits. It is based on the best and most up-to-date research.

Do they work?

Yes. Research shows programmes that include diet, exercise, and changing habits may help overweight children to reach a healthier weight. These programmes seem to have the best chance of success if the child's family is involved. However, the approach can be very intensive, and is often carried out in specialist hospitals. We don't know how well these programmes work without specialist support.

What are they?

There are lots of different types of programme to help overweight children and teenagers lose weight. But they usually include three parts.

- [Improving the child's diet](#) . This may include restricting the amount of food your child eats, changing the type of food he or she eats, or changing certain habits (for example, getting a child to eat breakfast and avoid snacks between meals). [More...](#)
- [Increasing physical activity](#) . There are lots of ways to do this, from encouraging sports and outside activities, to reducing the amount of television your child watches. [More...](#)

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- [Changing unhealthy habits](#) . This can include setting goals, thinking about how to tackle problems, and helping your child have more self-confidence and feel better about themselves. [More...](#)

All three parts of the programme are important. Your doctor might help you draw up a plan for things you can do at home. They may also suggest your child sees a therapist to help you plan a programme. Or your child might be referred to hospital to join a specialist programme for overweight children. ^[28]

Depending on your child's age, your doctor may suggest a goal of keeping at the same weight for six to 12 months, or losing some weight.

- If your child stays at the same weight, and is still growing in height, he or she may 'grow into' a healthy weight, without needing to lose weight.
- If your child has stopped growing in height, or is at a weight that would be unhealthy for a fully grown adult, he or she may need to lose some weight.

We know that parents are key to the success of this type of programme. One study even found that the programme worked when parents attended sessions alone, without their children. However, other studies are less clear about the benefits of parental involvement. There's not been enough research for the parents-only approach to be recommended. ^[33] ^[34]

How can they help?

Programmes for overweight children may help them: ^[35] ^[36] ^[37] ^[38] ^[39] ^[40] ^[41] ^[42]

- Avoid putting on more weight
- Lose weight
- Become a healthier weight for their height, sex, and age
- Reduce the amount of fat in their body
- Feel better about themselves and the way they look.

Programmes where at least one parent takes part with the child work best. ^[35] ^[8] ^[43]

This might mean the parent comes along to the child's treatment sessions, or the parent has a separate session with the child's health care team.

Parents can help children by:

- Providing healthy meals

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- Deciding what food to have in the house
- Helping their child take part in physical activities, such as sports or exercise
- Encouraging their child to stick to their agreed programme
- Helping monitor what food they eat and how much exercise they take
- Encouraging a healthy attitude towards food and setting a good example.

If you as a parent are also overweight, it may help your child if you take part in a programme to lose weight at the same time. ^[28]

But we need more research to show which types of programme work best. We also need more long-term research, to find out whether children on these programmes manage to stay at a healthy weight afterwards. ^[44] One review of studies found that children age 12 and older were more likely to still be a healthier weight a year after the programme than those who were under age 12. ^[37]

Most of the research has been done with children who are very seriously overweight. Many have attended intensive specialist programmes, which some studies suggest work better than programmes provided in the community or online, or by a child's doctor. ^[36] Children and parents in these intensive programmes might meet with health professionals once or twice a week, for an hour or more.

How do they work?

There are two main things that affect how your child puts on weight: the amount of energy they take in through food, and the amount of energy they use up. ^[5] To lose weight, or to stop putting on weight, your child needs to use the same amount of energy as they take in as food.

So it makes sense that either reducing the amount of food your child eats, or increasing the amount of exercise he or she does, should help your child reach a healthy weight.

But if your child just reduces the amount of food he or she eats, their body may respond by reducing the amount of energy he or she uses up. And if a child just exercises more, he or she may feel hungrier and eat more. It's important to do both things together to have the best chance of losing weight. ^[6]

There are lots of reasons why children find these things hard to do. They may have habits that are hard to break, such as eating crisps or biscuits in front of the television when they get home from school, or skipping games lessons because they are embarrassed about wearing PE kit in front of other children.

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So it's also important for children and their families to get help with changing their habits.

^[8] For example, families might agree to a rule that no one watches television before the evening meal, or children may get help to increase their self-confidence so they feel happier about taking part in sports.

By tackling all three areas together, programmes should give children the best chance of reaching a healthy weight. ^[45]

Can they be harmful?

Some parents worry that overweight children who are encouraged to lose weight may get eating disorders like **anorexia** in later life.

However, research shows that children who take part in three-part programmes to encourage healthy diet, more physical exercise, and better habits do not go on to have eating disorders. ^[8]

In one study, some children in the weight-loss programme felt sick or dizzy at times. But these problems were not severe and didn't get in the way of their daily lives. ^[41]

None of the other studies we looked at said that children came to any harm by taking part in them. However, few of the programmes lasted more than two years, and not all of them looked to see whether the children came to any harm.

How good is the research on programmes that include diet, exercise, and changing habits?

We found quite a lot of research looking at programmes to help overweight children. We looked at four summaries of the research (**systematic reviews**). ^[36] ^[38] ^[39] We also looked at five other studies (**randomised controlled trials**). ^[40] ^[41] ^[42] ^[46] ^[35]

Most showed that programmes to help children control their weight can work. But, overall, the quality of the evidence to show which programmes work best is quite poor.

This is partly because the programmes used different techniques, so it's hard to compare one programme with another. Also, not all the studies showed positive results. And most of the programmes lasted two years or less, so we don't know how successful they were in the long term.

We need more research to find out which programmes work best for overweight children. We also need more long-term research to see whether children who lose weight in these studies manage to stay at a healthier weight when they become adults.

The research is best for programmes that combine diet, exercise, and changing habits. But that doesn't mean it's not worth, for example, a family just increasing the amount of activity they do. There's just not the evidence to show that it works well on its own to help your child stay at a healthy weight.

Medicines for children who are overweight

In this section
[Do they work?](#)
[What are they?](#)

This information is for parents of children with weight problems. It tells you about medicines for children who are overweight.

Do they work?

We haven't yet taken an in-depth look at the research on obesity drugs for children. These drugs are not often used. (To read more about how we use research to rate treatments, see Our method.) But we've included some information because you may be interested in these drugs.

What are they?

Medicines to reduce weight aren't often recommended for children. They are only likely to be used if a child's weight is putting their health at serious risk.

There isn't enough research to say for certain whether these medicines are safe for children to use, or whether they work for children. ^[45]

The medicine that is sometimes used for overweight adults in the UK is called orlistat (brand name Xenical). Orlistat works by stopping the body from absorbing fat from the diet.

There haven't been many studies looking at these drugs for children. In studies, teenagers taking orlistat got higher blood pressure and stomach upsets. ^[45]

One summary of the research (systematic review) says doctors could consider prescribing orlistat to teenagers providing they take part in a weight loss programme. ^[37]

There have been some studies on metformin, a drug that's mainly used for diabetes. These studies show it may help children and adolescents lose some weight. ^[47] ^[48]

If your doctor thinks your child may need medicines, it's important that they are treated in a specialist centre with experience of treating overweight children. The centre should also be taking part in research to find out whether the medicines work and are safe for children.

The National Institute for Health and Care Excellence (NICE), which advises the government on health care, says medicines are not recommended for children under 12 years old. NICE also says medicines should only be used in children over 12 if they have other health problems caused by being overweight. ^[28]

Bariatric surgery

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[How good is the research on bariatric surgery?](#)

This information is for parents of children with weight problems. It tells you about surgery for children who are overweight. It is based on the best and most up-to-date research.

Does it work?

We don't know. Surgery is rarely used for children who are overweight. It's unclear whether the possible benefits of surgery outweigh the risks.

What is it?

Stomach surgery is sometimes used for adults who are very overweight. It reduces the size of their stomach, so they feel full sooner and can only eat a small amount at a time. It usually works for adults, helping them lose large amounts of weight.

However, this type of surgery is generally not recommended for children. The National Institute for Health and Care Excellence (NICE), which advises the government on health care, says it should only be used in exceptional cases, and only if the child is physically mature. ^[28]

If your doctor thinks your child may need surgery, it's important that they are treated in a specialist hospital with experience of treating overweight children. The centre should be also taking part in research to find out whether surgery works and is safe for children.

How can it help?

There hasn't been enough research to say whether bariatric surgery for very overweight children is safe and works in the long term.

We found one study that included teenagers with severe weight problems. Some had gastric band surgery and the others participated in a weight loss programme. ^[49] In a gastric band operation, a surgeon puts a thin band around the stomach, which divides it into two parts. The top part of the stomach becomes a small pouch, which can only hold a few ounces of food.

Around 8 in 10 teenagers who had the surgery lost at least half their excess weight, compared with roughly 1 in 10 who participated in a weight-loss programme. But one-third of the teenagers who had the surgery needed at least one more operation afterwards.

How does it work?

Bariatric surgery works by reducing the amount of food the stomach can hold. After this surgery, you can only eat small amounts of food before you feel full. The idea is that you then stop eating.

Can it be harmful

Bariatric surgery may be harmful for children, because they might be unable to absorb all the nutrients they need for healthy growth.

There are also other risks. It is a big operation. People who have stomach surgery have quite a high chance (1 in 8) of having problems from the operation. These include an **infection** in the wound, problems healing the wound, gallstones, and bowel problems. Some people even die from this surgery. ^[50]

How good is the research on bariatric surgery?

There is little good research on bariatric surgery for children. We found one study of 50 teenagers (aged 14 to 18) that compared gastric band surgery with a weight loss programme. ^[49] In a gastric band operation, a surgeon puts a thin band around the stomach, which divides it into two parts. The top part of the stomach becomes a small pouch, which can only hold a few ounces of food.

The teenagers who had surgery were much more likely to lose half their weight during the study, but 1 in 3 needed further surgery.

We need much more research to know whether bariatric surgery is safe and helpful for children.

Further informations:

Medical conditions that can cause children to become overweight

Certain disorders can cause a child to put on too much weight. But it's unlikely that weight gain would be the only symptom.

Children with **Down's syndrome** often put on a lot of weight for their height. They may need help from a specialist to keep their weight under control. ^[1]

A condition called **Cushing's syndrome** can make a child gain weight, especially on the face and around the waist. It means their body is making too many corticosteroids. These are chemicals that control how your body uses fat and sugar. Too many corticosteroids makes you feel tired, hungry, and bloated. Cushing's syndrome can be treated with surgery and medicines. ^[11]

Prader-Willi syndrome is quite rare. Children with this syndrome often feel very hungry all the time, and eat as much as they can. It can be difficult for parents to control their child's appetite. They are likely to need help from a specialist to keep their child at a healthy weight. ^[1]

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Medicines that can cause children to become overweight

Certain medicines can cause a child to put on weight.

- High dose corticosteroid tablets can make you feel hungry and bloated. Children who take them for a long time may eat too much and put on too much weight.
- Some drugs for epilepsy, especially drugs called valproate (brand name Epilin) or carbamazepine (Tegretol, Tegretol Retard), can cause weight gain.
- Drugs called anti-psychotics are rarely used for children. But they are used occasionally for children with serious behavioural or emotional problems. They can also cause weight gain.

Metabolic syndrome

The metabolic syndrome isn't a disease. It's a group of features that are linked to the body's metabolism. Your metabolism is the name given to all the chemical processes that take place in your body.

The metabolic syndrome is also known as **syndrome X** or **insulin resistance syndrome**.
[\[26\]](#)

The most common features of the metabolic syndrome are:

- Excess body fat around the abdomen
- High levels of harmful fats in the blood
- Low levels of a 'good' fat called high-density lipoprotein (HDL) cholesterol
- Blood pressure that is higher than normal
- Blood that clots too much
- Problems with how your body uses insulin. This means there may be too much sugar (glucose) in the blood.

If your child has any of the features of the metabolic syndrome, your doctor will tell you what to do to help your child stay healthy. Losing weight and doing regular exercise are important. Your doctor may advise you to make other changes in the way you live, and your child may also need to take medicine.

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People with metabolic syndrome are more likely to get type 2 diabetes, heart disease , a stroke , and some other conditions. ^[26] ^[27]

What can I do to help my child reach a healthy weight?

Parents can have a big impact on whether their children eat healthily and do enough physical activity. Doctors and researchers suggest taking the following steps to help your child reach a healthy weight. ^[29]

- Make sure your children can choose nutritious foods and drink, like fruit, vegetables, and milk, at meals and snack times.
- Avoid offering your children high-calorie , unhealthy foods such as sugary soft drinks and biscuits, at home and when you eat away from home.
- Don't use food as a reward (for example, offering a doughnut as a reward for finishing homework).
- Encourage children to eat breakfast.
- Find ways to increase enjoyable and practical physical activities for your children, such as playing football or dancing.
- Reduce the amount of time your child spends watching television or playing video games.
- Set a good example by eating and exercising healthily yourself.

Improving the child's diet

There are many different diets that have been tried to help children reach a healthy weight. The research doesn't tell us for sure which type of diet is best. But here are some of the things doctors often recommend.

- Concentrate on eating more fruit and vegetables. This means your child will be getting more nutrients and fibre , which are important in a healthy diet. Snacking on an apple or a carrot may make your child less likely to eat unhealthy snacks like biscuits or crisps.
- Avoid sugar-sweetened soft drinks, like cola or lemonade. ^[30] These drinks have a lot of calories , but drinking sugary liquid doesn't make us feel full in the way eating solid food does. So it's easy to take on a lot more calories than you need.

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- Try the 'traffic light' diet. This involves learning whether foods fall into 'red', 'yellow', or 'green' categories. Green foods, such as fruit and vegetables, can be eaten freely. Amber foods, such as cereals and dairy products, can be eaten in moderation. Red foods, such as sweets, biscuits, and crisps, should be avoided or eaten only occasionally. Ask your doctor for more information about this diet.
- Eat breakfast. A healthy breakfast means children don't feel hungry later, and can help them resist eating unhealthy snacks during the day. Children who are a healthy weight are more likely to eat breakfast than children who are overweight.
- Have family meals, where everyone eats the same food. Even if only one member of the family is overweight, it's easier for them to eat healthily if everyone, adults and children, sticks to the same rules.

Some research has looked to see whether certain types of diet are better than others for helping children control their weight. For example, researchers compared diets where children ate different amounts of protein compared with carbohydrate. But the research found there was no difference in the amount of weight the children lost.^[25] Another study comparing a high-protein diet with a standard diet also found no difference in how much weight the children lost.^[31]

Traffic light diet foods are divided into red, yellow, or green, based on how many nutrients they contain, compared with their calories. Green foods are very high in nutrients and low in calories. Yellow foods are higher in calories, but include many of the nutrients we need every day for a balanced diet. Red foods are high in calories but have very little nutrient value. We don't really need these red foods in our diet. This is one of the diets that has been most often studied in children.^[32]

Increasing physical activity

There are lots of ways that parents can help their children to become more physically active. Most doctors believe children should be doing at least an hour a day of physical activity. It can be broken into smaller chunks of 10 minutes at a time.

Physical activity doesn't have to be sport, although sport is great for children who enjoy it. It could mean taking a brisk walk, cycling to school, taking dance classes, or just playing games outside. It's best to try to find something your child enjoys doing, so they learn to see physical activity as a good thing.

In studies of physical activity, children were supervised doing exercises such as using a treadmill or exercise bike, playing competitive games, taking walks outside, running, dancing, or doing aerobics classes or gymnastics.

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One way to increase the amount of physical activity a child can do is to reduce the amount of time they spend on inactive pursuits, such as watching television or playing video games. Studies show that children who watch more television are more likely to be overweight.

You could restrict the amount of time the family watches television and uses the computer. Doctors recommend children should spend no more than two hours a day watching television or playing with video games or computers. This is sometimes called 'screen time' because it's the amount of time they spend sitting down looking at a screen.

Changing unhealthy habits

Some children find it very hard to manage their weight. They need a lot of help and encouragement to make the changes to their lives that will help them keep a healthy weight. They may also have lost confidence in themselves because of worrying about their weight, or being teased about it.

That's why some children benefit from seeing a counsellor about their weight. A counsellor might help the child to: ^[8]

- Understand more about food and a healthy diet
- Set goals to eat more healthily
- Decide how to increase the amount of exercise they do
- Solve problems (for example, work out how to deal with situations when they are tempted to go back to unhealthy habits)
- Increase their confidence, so they feel better about themselves and their bodies.

Families can also help a lot with this. If all the family agrees to the same rules (for example, not eating snacks in front of the television, or always going for a family bike ride at the weekends) then it's easier for the child to stick to them.

It's important that the child's parents understand what the child needs to do, and helps them to do it. This might involve helping the child avoid temptation, by not having unhealthy snack foods in the house, or unplugging the television so it's harder to switch on. ^[32] It might also involve having plenty of healthy food available, and suggesting alternative activities to watching the television, such as crafts or games.

Glossary:

calories

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A calorie is a unit that is used to tell how much energy is found in food. But when we talk about how many calories food contains, we actually mean kilocalories, or kcal, which contain 1,000 'small' calories. When your body stores energy instead of using it, you get heavier. This is why you gain weight if you eat foods that are high in calories and the energy is stored instead of used. If your daily calorie intake is the same as the amount of energy your body uses up, your weight will remain the same. If you consume more calories than your body uses, you put on weight. Foods containing fat are high in calories.

obesity

If your body stores more energy than you need, this can make you overweight. The excess energy is stored in your fat cells. If your weight goes above a certain level, doctors call this obesity. Obesity is considered a medical condition. The excess weight can be a strain on your bones and joints. And if you are obese, you're more likely to get other diseases. Doctors have developed a scale for telling how much excess weight you have. This measure, called the body mass index (BMI), depends on your height.

Epilepsy

Epilepsy is a condition that affects your brain. If you have epilepsy, the normal electrical activity in your brain gets disturbed from time to time. This leads to seizures (also called fits).

high blood pressure

Your blood pressure is considered to be high when it is above the accepted normal range. The usual limit for normal blood pressure is 140/90. If either the first (systolic) number is above 140 or the lower (diastolic) number is above 90, a person is considered to have high blood pressure. Doctors sometimes call high blood pressure 'hypertension'.

high cholesterol

If you've been told that you have high cholesterol it usually means that your total cholesterol level is 5mmol/l or higher. But doctors also look at the amount of good (HDL) and bad (LDL) cholesterol you have in your blood. Having high levels of bad cholesterol can make it more likely that you'll get certain diseases in your heart and arteries.

asthma

Asthma is a disease of the lungs. It makes you wheeze, cough and feel short of breath. Asthma attacks are caused by inflammation and narrowing of your airways, which makes it hard for air to pass in and out of your lungs.

diabetes

Diabetes is a condition that causes too much sugar (glucose) to circulate in the blood. It happens when the body stops making a hormone called insulin (type 1 diabetes) or when insulin stops working (type 2 diabetes).

heart disease

You get heart disease when your heart isn't able to pump blood as well as it should. This can happen for a variety of reasons.

stroke

You have a stroke when the blood supply to a part of your brain is cut off. This damages your brain and can cause symptoms like weakness or numbness on one side of your body. You may also find it hard to speak if you've had a stroke.

insulin

Insulin is a hormone that helps your body use glucose. Glucose is a type of sugar that gives you energy. Insulin keeps the levels of glucose in your body steady. Insulin also helps glucose to be carried in your blood, so that the glucose can get into your cells. People who have diabetes do not have enough insulin or do not react to insulin strongly enough. This means they can get too much glucose in their blood.

blood pressure

Blood pressure is the amount of force that's exerted by your blood on to your blood vessels. You can think of it like the water pressure in your home: the more pressure you have, the faster and more forcefully the water flows out of the shower. Blood pressure is measured in millimetres of mercury (written as mm Hg). When your blood pressure is taken, the measurement is given as two numbers, for example 120/80 mm Hg. The first, higher, number is called the systolic pressure, and the second, lower, number is the diastolic pressure. The systolic number is the highest pressure that occurs while your heart is pushing blood into your arteries. The diastolic number is the lowest pressure that happens when your heart is relaxing and is not pushing your blood.

cholesterol

Cholesterol is a fat-like substance made by your liver or absorbed from food. It is used by your body to make bile acids (which help your intestines absorb nutrients) and steroid hormones (like testosterone or oestrogen). Cholesterol is also an important part of cell membranes, which are the structures that surround cells. 'Good cholesterol' is called HDL; 'bad cholesterol' is LDL.

hormones

Hormones are chemicals that are made in certain parts of the body. They travel through the bloodstream and have an effect on other parts of the body. For example, the female sex hormone oestrogen is made in a woman's ovaries. Oestrogen has many different effects on a woman's body. It makes the breasts grow at puberty and helps control periods. It is also needed to get pregnant.

fibre

Fibre is all the parts of food that the body can't absorb. This is why foods that are high in fibre make you have more bowel movements. When your body can't absorb something, it leaves your body in your stools. Foods high in fibre include wholemeal bread and cereals, root vegetables and fruits.

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proteins

A lot of your body's tissues are made out of proteins. Proteins can be made in your cells. Proteins are also part of the food you eat, particularly meat and dairy products. Your body breaks down the protein you eat into amino acids. Your cells then use these amino acids to build new proteins, which make up muscles, joints, hair and other parts of your body.

anorexia

Anorexia is an eating disorder. People who have anorexia starve themselves because they think they are too fat. They do this even when they are very thin. It is most common among teenage girls. Doctors may call it anorexia nervosa.

systematic reviews

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

infection

You get an infection when bacteria, a fungus, or a virus get into a part of your body where it shouldn't be. For example, an infection in your nose and airways causes the common cold. An infection in your skin can cause rashes such as athlete's foot. The organisms that cause infections are so tiny that you can't see them without a microscope.

Sources for the information on this leaflet:

1. Lobstein T, Baur L, Uauy R. Obesity in children and young people: a crisis in public health. *Obesity Review*. 2004; 5: 4-104.
2. Jequier E, Tappy L. Regulation of body weight in humans. *Physiological Reviews*. 1999; 79: 451-480.
3. Flier JS, Foster DW. Eating disorders: obesity, anorexia nervosa, and bulimia nervosa. In: Wilson JD, Foster DW, Kronenberg HM, et al (editors). *Williams textbook of endocrinology*. 9th edition. WB Saunders, Philadelphia, U.S.A.; 1998.
4. Reilly JJ, McDowell ZC, Hacking B, et al. Health consequences of obesity. *Archives of Disease in Childhood*. 2003; 88: 748-752.
5. Schwartz MW, Woods SC, Porte D Jr, et al. Central nervous system control of food intake. *Nature*. 2000; 404: 661-671.
6. Tounian P. Dietary factors in childhood obesity. *Current Nutrition and Food Science*. 2007; 3: 135-140.
7. Weinsier RL, Hunter GR, Heini AF, et al. The etiology of obesity: relative contribution of metabolic factors, diet, and physical activity. *American Journal of Medicine*. 1998; 105: 145-150.
8. Whitlock EP, Williams SB, Gold R, et al. Screening and interventions for childhood overweight: a summary of evidence for the US Preventive Services Task Force. *Pediatrics*. 2005; 116: 125-144.
9. French SA, Story M, Jeffery RW. Environmental influences on eating and physical activity. *Annual Review of Public Health*. 2001; 22: 309-335.
10. Wardle J, Carnell S, Haworth CMA, et al. Evidence for a strong genetic influence on childhood adiposity despite the force of the obesogenic environment. *American Journal of Clinical Nutrition*. 2008; 87: 398-404.
11. Bray GA. The syndromes of obesity: an endocrine approach. In: De Groot L (editor). *Endocrinology*. 3rd edition. WB Saunders, Philadelphia, PA; 1995.
12. Agras W, Mascola A. Risk factors for childhood overweight. *Current Opinion in Pediatrics*. 2005; 17: 648-652.
13. Li L, Law C, Lo Conte R, et al. Intergenerational influences on childhood body mass index: the effect of parental body mass index trajectories. *American Journal of Clinical Nutrition*. 2009; 89: 551-557.
14. Baird J, Fisher D, Lucas P, et al. Being big or growing fast. *BMJ*. 2005; 331: 929.
15. Chen X, Beydoun MA, Wang Y. Is sleep duration associated with childhood obesity? A systematic review and meta-analysis. *Obesity*. 2008; 16: 265-274.

Weight problems in children

16. Dubois L, Farmer A, Girard M, et al. Regular sugar-sweetened beverage consumption between meals increases risk of overweight among preschool-aged children. *Journal of the American Diet Association*. 2007; 107: 924-934.
17. Reilly JJ, Wilson S. ABC of obesity: childhood obesity. *BMJ*. 2006; 333: 1207-1210.
18. Miller J, Grant A, Drummond B, et al. DXA measurements confirm that parental perceptions of elevated adiposity in young children are poor. *Obesity*. 2007; 15: 165-171.
19. Department of Health. Healthy weight, healthy lives: national child measurement programme - guidance for primary care trusts 2010/11. March 2010. Available at <http://dera.ioe.ac.uk/1971/> (accessed on 20 October 2014).
20. Health and Social Care Information Centre. Children's obesity and BMI. 2012. Available at <http://healthsurvey.hscic.gov.uk/support-guidance/public-health/health-survey-for-england/children%E2%80%99s-obesity-and-bmi.aspx> (accessed on 20 October 2014).
21. Office for National Statistics. National Travel Survey: 2010. July 2011. Available at <https://www.gov.uk/government/statistics/national-travel-survey-2010> (accessed on 20 October 2014).
22. Gordon-Larsen P, Adair LS, Nelson MC, et al. Five-year obesity incidence in the transition period between adolescence and adulthood: the National Longitudinal Study of Adolescent Health. *American Journal of Clinical Nutrition*. 2004; 80: 569-575.
23. Must A, Spadano J, Coakley EH, et al. The disease burden associated with overweight and obesity. *Journal of the American Medical Association*. 1999; 282: 1523-1529.
24. Bjørge T, Engeland A, Tverdal A, et al. Body mass index in adolescence in relation to cause-specific mortality: a follow-up of 230,000 Norwegian adolescents. *American Journal of Epidemiology*. 2008; 168: 30-37.
25. Rolland-Cachera MF, Thibault H, Souberbielle JC, et al. Massive obesity in adolescents: dietary interventions and behaviours associated with weight regain at 2 y follow up. *International Journal of Obesity and Related Metabolic Disorders*. 2004; 28: 514-519.
26. Grundy SM, Cleeman JI, Daniels SR, et al. Diagnosis and management of the metabolic syndrome: an American Heart Association/National Heart, Lung, and Blood Institute scientific statement. *Circulation*. 2005; 112: 2735-2752.
27. Morrison JA, Friedman LA, Gray-McGuire C. Metabolic syndrome in childhood predicts adult cardiovascular disease 25 years later: the Princeton Lipid Research Clinics Follow-up Study. *Pediatrics*. 2007; 120: 340-345.
28. National Institute for Health and Care Excellence. Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children. December 2006. Clinical guideline 43. Available at <http://www.nice.org.uk/CG43> (accessed on 20 October 2014).
29. Ritchie L, Welk G, Styne D, et al. Family environment and pediatric overweight: what is a parent to do? *Journal of the American Dietetic Association*. 2005; 105: 70-79.
30. Ebbeling CB, Feldman HA, Chomitz VR, et al. A randomized trial of sugar-sweetened beverages and adolescent body weight. *The New England Journal of Medicine*. 2012; 367: 1407-1416.
31. Gately PJ, King NA, Greatwood HC, et al. Does a high-protein diet improve weight loss in overweight and obese children? *Obesity*. 2007; 15: 1527-1534.
32. Epstein LH, Paluch RA, Kilanowski CK, et al. The effect of reinforcement or stimulus control to reduce sedentary behavior in the treatment of pediatric obesity. *Health Psychology*. 2004; 23: 371-380.
33. Boutelle KN, Cafri G, Crow SJ. Parent-only treatment for childhood obesity: a randomized controlled trial. *Obesity*. 2011; 19: 574-580.
34. Hingle MD, O'Connor TM, Dave JM, et al. Parental involvement in interventions to improve child dietary intake: a systematic review. *Preventive Medicine*. 2010; 51: 103-111.

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35. Kalarchian MA, Levine MD, Arslanian SA, et al. Family-based treatment of severe pediatric obesity: randomized, controlled trial. *Pediatrics*. 2009; 124: 1060-1068.
36. Whitlock EA, O'Connor EP, Williams SB, et al. Effectiveness of weight management programs in children and adolescents. *Evidence Report/Technology Assessment*. 2008; 170: 1-308
37. Oude Luttikhuis H, Baur L, Jansen H, et al. Interventions for treating obesity in children (Cochrane review). In: *The Cochrane Library*. Wiley, Chichester, UK.
38. McGovern L, Johnson JN, Paulo R, et al. Clinical review: treatment of pediatric obesity: a systematic review and meta-analysis of randomized trials. *Journal of Clinical Endocrinology & Metabolism*. 2008; 93: 4600-4605.
39. Kelly SA, Melnyk BM. Systematic review of multicomponent interventions with overweight middle adolescents: implications for clinical practice and research. *Worldviews on Evidence-Based Nursing*. 2008; 5: 113-135.
40. Huang SH, Weng KP, Hsieh KS, et al. Effects of a classroom-based weight-control intervention on cardiovascular disease in elementary-school obese children. *Acta Paediatrica Taiwanica*. 2007; 48: 201-206.
41. Li M. Anti-obesity effect of comprehensive diet and sports in girl students with simple obesity or overweight. *Chinese Journal of Clinical Rehabilitation*. 2006; 10: 44-46.
42. Dai J, Jiang Z, Zhang B. Exercise and nutrition therapy for simple obesity in children. *Chinese Journal of Clinical Rehabilitation*. 2006; 10: 20-22.
43. Niemeier BS, Hektner JM, Enger KB. Parent participation in weight-related health interventions for children and adolescents: a systematic review and meta-analysis. *Preventive Medicine*. 2012; 55: 3-13.
44. Ho M, Garnett SP, Baur L, et al. Effectiveness of lifestyle interventions in child obesity: systematic review with meta-analysis. *Pediatrics*. 2012; 130: e1647-e1671.
45. Tsiros M, Sinn N, Coates AM, et al. Treatment of adolescent overweight and obesity. *European Journal of Pediatrics*. 2008; 167: 9-16.
46. Wake M, Baur LA, Gerner B, et al. Outcomes and costs of primary care surveillance and intervention for overweight or obese children: the LEAP 2 randomised controlled trial. *BMJ*. 2009; 339: 3308.
47. Park MH, Kinra S, Ward KJ, et al. Metformin for obesity in children and adolescents: a systematic review. *Diabetes Care*. 2009; 32: 1743-1745.
48. McDonagh MS, Selph S, Ozpinar A, et al. Systematic review of the benefits and risks of metformin in treating obesity in children aged 18 years and younger. *JAMA Pediatrics*. 2014; 168: 178-184.
49. O'Brien PE, Sawyer SM, Laurie C, et al. Laparoscopic adjustable gastric banding in severely obese adolescents: a randomized trial. *Journal of the American Medical Association*. 2010; 303: 519-526.
50. Sjöström L, Lindroos AK, Peltonen M, et al. Lifestyle, diabetes, and cardiovascular risk factors 10 years after bariatric surgery. *New England Journal of Medicine*. 2004; 351: 2683-2693.

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