

TODDLER MEALS: HOW MUCH DO THEY NEED?

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LEARNING POINTS

- 1 Toddlers require a healthy, varied and well-balanced diet to thrive and grow.
- 2 Toddlers have smaller stomachs than adults and eat smaller amounts of food more often. They need a regular routine of three meals and two to three healthy snacks each day. Toddlers will best maintain a normal weight and growth rate when meals and snacks are regularly spaced throughout the day.
- 3 Toddlers should not be allowed to 'graze' on food throughout the day.
- 4 Portion sizes should be tailored to toddlers' needs. A large active toddler will need more food than a smaller, less active child.
- 5 Toddlers regulate their food intake by eating when they are hungry and by stopping eating when they feel full. Some toddlers regulate their intake to meet their needs, week by week rather than day by day.
- 6 When toddlers eat too much or too little at one meal they may compensate by eating less, or more, at the next meal.
- 7 Restricting food or persuading toddlers to eat when they do not want to can interfere with these regulatory and compensatory processes.
- 8 Prompting or persuading can lead to stressful mealtimes, which in turn can cause toddlers to refuse food at that and at future meals.
- 9 Withholding specific foods or using them as a reward for eating can make them seem more desirable. As children get older they respond more to social cues to overeating. Some children are more likely than others to overeat both at and between mealtimes.
- 10 Growth is a better indicator of food intake than mealtime behaviour.

TODDLER MEALS: HOW MUCH DO THEY NEED?

Toddlers require a healthy varied and well-balanced diet to thrive and grow. During the course of the day toddlers should usually be offered three meals and two to three snacks. The foods they are given should be part of a mixed balanced diet designed to meet their nutritional needs.

Food should not be freely available throughout the day because 'grazing' reduces toddlers' ability to regulate their food intake to match their needs. Nor should food and snacks be withheld in order to make toddlers hungry for the next meal. Toddlers can usually maintain their weight and rate of growth appropriately when they have regular meal and snack times throughout the day. However they should not be forced to eat everything on their plate, nor should they be coaxed to eat more than they want.

Parents should avoid using food to reward their toddler's eating behaviour, or insisting that a first course must be finished before a second course is offered. Portion size should be appropriate for the toddler; a small child has a smaller appetite than a large child of the same age, and will eat and require less food to maintain normal weight and growth.

There are differences, however, in the way that toddlers develop in their response to food. Some children seem to be reluctant to eat what they need, and some seem to want to eat more than they need. These differences are, to a great extent, genetically determined.

FOOD INTAKE: A BALANCING ACT

Regulation – While parents and carers control how much food is offered to toddlers and should supervise them at mealtimes, children can regulate the amount that they need to eat and drink if parents allow them to do so. The child's brain (just like the adult's) has appetite and satiety centres which can 'recognise' how many calories (the energy content) are in the food and drinks they consume and they usually 'know' when energy requirements have been met and they are no longer hungry.



Compensation – When a meal is missed, or not much is eaten, a toddler may eat a larger portion or a more calorie-dense food at a later meal. This process is called compensation and over the course of the day, or over the course of some days, this will even out the peaks and troughs of food intake.

The processes of regulation and compensation can go wrong, or be over-ridden by certain feeding practices. If food is restricted in any way it may be seen as more desirable, and usually it is high calorie, fatty or sweet foods that are restricted. The child might then want to eat more of that food when they can get it, leading to weight gain. Similarly, if toddlers are pressured to eat foods that they don't like, they will try to avoid eating at all, and this may in turn lead to under-eating and weight loss.¹ Unfortunately parents will often try to restrict the food intake of a child that they think is overweight, and try to pressure a possibly underweight child to eat more.

LEARNING TO REGULATE FOOD INTAKE

Children learn to regulate their food intake and to compensate for missed meals from infancy, breastfed infants control the amount of milk they take from the mother. If they have a small or short feed early in the day then they will usually have a bigger or longer feed later in the day. Similarly, very young infants begin to show compensatory behaviour if the calorie (energy) load of their milk feeds is changed.²

This process is not very precise in young infants but improves with age. Toddlers are usually capable of regulating their food intake to give them enough calories not only to match their energy needs for physical activity but also for normal growth.³ This regulatory and compensatory system applies to all sources of calories, including food at mealtimes, snacks, milk and other drinks, whether or not they are given during the day or at night. A toddler who is having a lot of milk in their diet either from the breast or from the bottle, may not have such a good appetite for solid foods.

Toddlers have smaller stomachs than adults and therefore need to eat small meals more often; e.g. more than three times per day. For this reason, it is best not to withhold snacks to make a toddler hungry for the next meal.⁴ Some children cannot regulate their food intake well if food is withheld; they learn to be less rather than more hungry, and may lose weight as a result. Conversely, older children are more likely to become overweight if they eat infrequently throughout the day.⁵ Giving regular meals and snacks helps with weight and intake regulation. However, allowing the child to graze throughout the day on food left around the house, does not help the child to recognise and experience the signals of hunger and satiety.

OVEREATING AND UNDEREATING

REASONS FOR FALTERING GROWTH

The commonest cause of growth faltering in a toddler is that the child is not eating enough food.⁶ It is rare that there is a medical cause.

Insufficient food intake sometimes occurs because toddlers are poor at regulating their food intake, but more often it is because of what is happening at mealtimes. Many toddlers are fussy and difficult eaters, which is common at this age, but some parents may not be sensitive to their child's signals of preference and fullness.

If parents repeatedly prompt or coerce a child to eat because they are worried about poor intake, then the child is more likely to refuse the food that is offered. This prompting can be quite mild; it does not have to be overt force-feeding, although force-feeding is the strongest predictor of food refusal. Children become very anxious if they are pushed to eat foods that they don't like, or more food than they need, so repeated prompts to eat a food can lead to a decrease in intake of that food.⁷ This can be a circular process: as parents become more anxious about a child's weight they put pressure on the child to eat more at mealtimes, and the child is then likely to refuse the food offered. Sometimes, when parents and toddlers get into this vicious cycle, the child may eat more as a snack, at a time when there is less pressure from the parents to eat. This reaction by the child is another reason for a regular routine of giving food at meals and as snacks. If a child refuses food at a mealtime because they feel stressed then they may well eat at the next snack time, and frequent meal and snack times can make parents feel less anxious about getting their child to eat. [see Factsheet XX](#) for practical tips on how to manage faddy eating and food refusal.

Another strategy used by parents to get their child to eat is to try to reward them, either for eating up their 'healthy' first course with the offer of a pudding, or by trying to reward them for eating food that they don't like or which they do not feel the need to eat. Children can be hungry for their puddings even though they have not finished their first course, but using food as a reward has the opposite effect to the one that parents want, the sweet course becomes more desirable than the first course because it is a reward, and rewards are always better.⁸ Rewarding children for eating more than they want, will lead them to ignore their fullness cues, and can lead to overeating and becoming overweight.

Food refusal at mealtimes has two main causes other than normal toddler fussiness:

Stress and coercion

If:

- mealtimes are stressful, toddlers become anxious and lose their appetite as mealtime approaches.
- toddlers are made to eat, they can feel that they do not want to. This may lead to weight loss.

OVEREATING

The commonest cause of excess weight gain, sometimes leading to obesity, is excess food intake and/or insufficient physical activity. Some parents expect children to eat all the food on their plate or finish up their first course before they are allowed their pudding. This may prevent toddlers 'listening' to their internal signals of hunger. Instead of eating the amount of food that they need to eat, they will start to eat as much as their parents think that they should eat. When this happens in a family, the toddler can grow up thinking that he or she has to finish up all food given, whether still hungry or not.⁹ So as children get older they tend to listen less to their internal cues to hunger and fullness and respond more to what others around them are doing; they start to finish up what is on their plate, because others are eating even if they are not hungry.



Social cues to overeating

- Finish what is on the plate
- Imitate other's eating habits
- Eat when others are eating, even if they are not hungry – and when prompted or rewarded
- Comfort eat

Even in infancy when parents don't respond appropriately to signals of fullness and misread hunger behaviours, babies can be fed more than they need and this can lead to becoming overweight. So parents should try not to insist that their children finish up everything on their plate, and should be careful about the portion sizes that they offer to their toddler. [see Factsheet XX](#)

EATING IN THE ABSENCE OF HUNGER

Although most children can regulate their calorie energy intake, and only take the food that they need to grow and run around, there are also some children who do not do this very well. We know that some children tend to be fussier than others and that these children tend to respond less well to internal cues of hunger, but there are also children who are less able to respond to internal cues of fullness. These children are more likely to eat when they are not really hungry (eating in the absence of hunger) and may also be more responsive to food cues. This means that if they see any food they are likely to want to eat it; if they are given larger portions of food than they really need then they will finish up what is on their plate. These children will continue to want to eat even though they have just had a big meal. This will happen with any food, not just sweets and treats.¹⁰ These traits start to develop as toddlers get older and as parents start to encourage them to eat foods that they don't really need.¹¹

Both food fussiness and food responsiveness are, to a great extent, genetically determined, but how the parent responds to these traits can make a difference to whether or not the child over or under eats. Children who are food responsive and who eat in the absence of hunger are at risk of becoming overweight. This is often because when children are very responsive to food then some parents will use food to regulate their child's mood. So if the child is angry, upset or tired, then the parent might well give them a snack to keep them happy. This 'feeding in the absence of hunger' can make a food responsive child more susceptible to regulating their own mood as they get older, by 'treating' themselves to food. Using food to change a child's mood does not usually work with children who are food fussy, they are not very responsive to food used either as a reward or a treat.

Another strategy which parents might use with a food responsive child is that of withholding 'treat' foods. Unfortunately this doesn't work very well. When food is restricted and the child knows that it is restricted, either verbally or physically, then the child will want that food more. So having a plate of biscuits on display and telling the child that they can only have one, makes the rest of the biscuits really desirable! The only effective way to restrict foods that you do not want your child to eat – is not to have them in the house!¹²

Characteristics of food responsive children include:

- particularly enjoying food
- eating very quickly
- eating when they are not hungry
- asking for food outside of their meals and planned snacks so eating more frequently
- eating all the food they are given ('plate clearers')
- eating whenever they see accessible food



HOW DO PARENTS KNOW WHEN THEIR TODDLER IS EATING ENOUGH?



Many parents worry that their toddlers are not eating enough, and this can lead them to try to override their toddler's attempts at appetite regulation. But small children have smaller appetites than larger children.¹³ Children are programmed to take in the amount of food that they need to grow normally and maintain body proportions. They generally follow the same growth centiles for height and weight on the growth charts. A toddler whose height and weight are both on the 2nd centile will eat less than a child whose height and weight are following the 98th centile. Both of these children should be able to regulate their food intake to accord with their energy requirements, but the taller child will need to eat more.

Parents sometimes compare their toddler with other children, but even children within the same family can have different appetites and physiques. Parents can be led to believe that their child should be eating an 'average' portion size according to his or her age, whereas he or she may need to eat more or less according to his or her weight and height (ideally to maintain a proportionate body shape). For this reason, exact portion sizes are not recommended for children, although portion sizes should be smaller than those prepared for adults. For more information on portion ranges [see Factsheet 1.7i](#).

Toddlers differ from one another in the amount of food that they need in any one day. This is because one child might be more physically active than another; each will be growing at a different rate, and making use of the food eaten at a different rate. A large energetic toddler will need more food at one meal or snack time than a small and less active child. The child's growth rate is a guide to whether he or she is eating 'too little', 'enough', or 'too much'. Most parents realise that if their child is growing out of his or her clothes and shoes and is not too fat or too thin, then they need not worry about food intake. However, it may be reassuring for some parents to see their child's growth plotted on a growth chart.

DAILY VERSUS WEEKLY INTAKE

Some children have difficulty in regulating their appetite day-to-day. They may have 'good days' when they eat well and 'bad days' when they seem to eat very little. When parents are concerned about their child's intake they often report that within any one week there are a few days when the child eats really well, a few days when the child picks at the food, and a few days of just about acceptable eating. Children who follow this pattern are regulating their food intake week-by-week, rather than day-to-day. Children who have these ups and downs can be seen as fussy eaters, whereas they may simply be 'poor regulators'. Sometimes some other factor, such as constipation, is causing these fluctuations in appetite, but very often there is no discernable cause.¹⁴ Looking at their weekly food intake and/or at their growth chart will show whether or not toddlers are eating what they need to eat to grow normally.

RECOGNISING THE SIGNALS OF HUNGER AND FULLNESS

Toddlers eat most of whatever they are going to eat from one course of a meal, or a snack, in about 20 to 30 minutes, and without too much prompting if it is food that they like. They will stop eating when they feel that they have had enough to eat, but if parents try to continue with the meal, toddlers may show by their behaviour that they are no longer hungry.

How do you know that they have had enough?

Infants will:

- turn their head away from food that they do not want
- spit the food out
- close their mouth and push the spoon fork or plate away

Older infants and toddlers may:

- close their mouth
- turn their head from food they don't want
- block their mouth with their hand
- hold food in their mouth
- spend a long time chewing food
- spit out food
- vomit

Older children will:

- get out of their chair
- say 'no', or say no to food
- play with any food that is left
- take a long time to eat
- hide the food behind nearest furniture
- chatter a lot
- find excuses to move from the table

If a child refuses food that is offered it is best to take the food away without comment, to offer another course if that is appropriate or, if not, just wait until the next snack or meal to offer further food. It could be, of course, that the toddler just doesn't like the food that is being offered. If the toddler is going through the stage of food refusal, which is very common, it is best to offer portions of food that the toddler likes to ensure that calorie intake is maintained.

However, to expose children to a varied and balanced diet, parents should continue to offer small portions of less-liked foods that they want the toddler to eat, on a separate plate but without any pressure to try them or to finish them. [see Factsheets 2.1,2.2,2.3](#)



References

1. Farrow C.V, Haycraft E, Blissett J.M. (2018) Observing Maternal Restriction of Food with 3–5-Year-Old Children: Relationships with Temperament and Later Body Mass Index (BMI) *Int. J. Environ. Res. Public Health* 2018, 15, 1273; doi:10.3390
2. Fomon SJ, Filer LJ, Thomas L, Anderson TA, Nelson SE. (1975) Influence of formula concentration on caloric intake and growth of normal infants. *Acta Paediatric Scandinavica*, 1975, 64, 172-81
3. Birch LL, Johnson SL, Andresen G, Peters J, Schultze, MC. (1991) The variability of young children's energy intake. *New England Journal of Medicine*, 324,232-5
4. Toschke AM, Kuchenhoff H, Koletzko B, von Kries R. (2005) Meal frequency and childhood obesity. *Obesity Research* 2005,13, 1932-8
5. Koletzko B, Toschke AM. (2010) Meal pattern frequencies: Do they affect body weight in children and adolescents? *Critical reviews in Food science and Nutrition*. 2010, 50, 2,100-105
6. Drewett R, Kasehara M, Wright C. (2004) Feeding behaviour in young children who fail to thrive. *Appetite*, 2004, 40, 55-60
7. Blissett J, Bennett C, Fogel A, Harris G, Higgs S. (2016) Parental modeling and prompting effects on acceptance of a novel fruit in 2-4-year-old children are dependent on children's food responsiveness. *British Journal of Nutrition*, 115, 03, pp 554-564
8. Cooke LJ, Chambers LC, Anez VA, Wardle J. (2011) Facilitating or undermining? The effect of reward on food acceptance. *A narrative review. Appetite* 57 (2011) 493–497
9. Lumeng J.C, Burke LM. (2006) Maternal prompts to eat, child compliance, and mother and child weight status. *J Pediatr* 2006; 149:330–335
10. Syrad H, Johnson, Wardle J, Llewellyn, C. (2016) Appetitive traits and food intake patterns in early life. *American Journal of Clinical Nutrition*, 103(1), 231-235. DOI: 10.3945/ajcn.115.117382
11. Faith MS, Kelley S, Birch LL, Francis L, Sherry B. (2004) Parent-Child feeding strategies and their relationship to child eating and weight status. *Obesity Research*, 2004, 12, 11, 1711-1722
12. Farrow C.V, Haycraft E, Blissett, J.M. (2018) Observing Maternal Restriction of Food with 3–5-Year-Old Children: Relationships with Temperament and Later Body Mass Index (BMI) *Int. J. Environ. Res. Public Health*, 15, 1273; doi:10.3390
13. Blissett J, Harris G, Kirk J. (2001) Feeding problems in children with Silver-Russell Syndrome. *Developmental Medicine and Child Neurology*, 2001, 43; 39-44
14. Harris G, Blissett J, Johnson R. (2000) Food refusal associated with illness. *Child Psychology and Psychiatry Review*, 2000, 5, 2, 148-156

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TODDLER MEALS: HOW MUCH DO THEY NEED? GUIDANCE & TIPS FOR PARENTS



- 1) Toddlers have smaller stomachs than adults and so need to eat smaller amounts of food more often. Offer three meals and two or three planned snacks a day but don't allow your toddler to 'graze' on food in between meals and snacks.
- 2) Most toddlers can control their food intake to meet their energy needs for normal growth and development.
- 3) Like adults, children regulate their food intake by feeling hungry when they need food and feeling full when they have eaten and drunk enough.
- 4) There is no such thing as an 'ideal' portion size for all toddlers. A large active toddler will need more food than a smaller, less active child.
- 5) If your child is growing well and developing normally, then do not worry too much about their eating habits. Growth and development is a better indicator of appropriate food intake than mealtime behaviour.
- 6) As toddlers get older they will copy others and respond to external cues to eat when they are not really hungry, be careful not to give portions that are too large for a child.
- 7) There are inborn differences between children in how likely they are to overeat when not hungry. Just because a child is asking for food it doesn't always mean that they really need it. Check their weight and height to see if your 'hungry' child is overeating, otherwise they may be at risk of becoming overweight.
- 8) Do not worry if your child is a fussy eater. He or she may still be in control of their food intake, although regulation may be week-to-week rather than day-to-day. Make sure you allow them their preferred foods to prevent growth faltering.
- 9) • Making toddlers eat when they do not want to
• Withholding food that they like
• Insisting that they finish up what is on their plate
• Withholding snacks to make them hungry for the next meal
can upset his or her food intake control.
- 10) Forcing your toddler to finish food that he or she does not like can make mealtimes stressful. This may cause your toddler to refuse food.
- 11) Don't say 'you can't have pudding until you've finished your first course' or use sweets or snacks as a reward because this will make these foods seem more desirable to your toddler. If your toddler does not finish the first course, remove the food without making any comment and move on to the next course.



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