

Dietary Approach

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Dietetics is an important part of the therapeutic approach in pediatric obesity. In this section, we shall first study the general principles of the dietary approach. We will then present more concrete points for usual practice.

General Principles

Obesity results from an energy imbalance in a child with one or more risk factors. The therapeutic approach should therefore aim to help the child/adolescent and his/her family to progressively correct the imbalance between intake (food) and energy expenditure (sedentary lifestyle, physical activity...), while taking into account the psychological and social context. The dietary approach is therefore necessary, but not sufficient on its own, and should be integrated into an overall management strategy.

European and international guidelines (1-10) all concord in recommending the following points:

- A personalized behavioural approach, aimed at reducing overall energy intake
- Promoting a balanced and varied diet, with particular emphasis on eating breakfast as well as fruit and vegetables, while limiting snack foods and soft drinks
- Advice that is appropriate for the child's age and involving the child's family
- Very low calorie diets are contra-indicated

Beyond the contents of the child's plate, current knowledge in the field of psychology of nutrition behaviour (10) also encourages the following:

- Providing support to parents and reinforcing their role as educators: avoid comfort/reward foods, learning to say "no", and adopting an appropriate educational style (not too permissive, not too authoritarian, not neglectful).
- Ensuring that the behaviour of the parents and the rest of the family (grandparents, brothers and sisters) and of any other persons responsible for the child, is coherent with the management objectives (items purchased, contents of cupboards and refrigerator, quantities prepared etc).
- Protecting the child against any form of stigmatization. The child/adolescent should not find themselves isolated (different menu, obliged to eat more fruit and vegetables than others, etc). If harmonization of practices within the whole family is not effective, this can put the child/adolescent in a difficult situation.

The objective of dietary accompaniment is therefore to obtain a lasting change in the dietary habits of the child/adolescent and their family, with the overall aim of reducing energy intake.

Is the dietary approach necessary in every situation?

It is of vital importance to take an interest in the child's nutrition. Close analysis of the situation, the context the child lives in and their habits, is necessary, in collaboration with the child and their entourage. This analysis may lead to the conclusion, for example, that the main problem inciting the child to eat too much is psychological suffering. In this case, changing the dietary habits may be ineffective, or even deleterious since it might put the child in difficulty or remove their source of protection against this suffering. In this specific situation, the focus should be on the psychological approach, associated with an

increase in physical activity.

Therapeutic approach

Initial analysis

This is the first, indispensable step. Each situation is different, and no overweight child is likely to have the same eating habits or the same nutrition behaviour as another.

The following questions should be explored in this first analysis:

- What does the child/adolescent eat ?
- In what quantity ?
- When ?
- Where and how?
- With whom?
- What are their tastes, and what are the familial and cultural habits?
- Does the family have financial difficulties?
- Have any changes already been undertaken?

The active participation of the child (depending on their age) and of their family is vital to ensure that this initial work-up is as thorough as possible, and not simply the opinion of the caregiver.

This can be achieved by performing an interview, for example with the aid of tools such as a **weekly food diary or a questionnaire**.

The weekly food diary should be filled in prior to the interview: everything that the child eats during the days before the interview should be noted (either by the child or the parents). A diary over 4 days is sufficient, comprising 2 days of rest and 2 days of school. Nothing should be omitted, everything should be noted including snacks outside of mealtimes, the quantities consumed, and drinks. The child should be reassured that he/she will not be reprimanded in any way, nor will the family be judged. A more complete questionnaire can also be used in addition to the food diary. Completing these documents often helps families to start reflecting on their behaviour and propose solutions.

Identification of difficulties and resources

Once the initial analysis has been performed, the second step consists in defining – again, in collaboration with the child and his/her family – the main **problems** that contribute to the energy imbalance in terms of nutrition:

- Size of the portions at meals
- Eating between meals
- Daily consumption of sugary drinks
- A diet that is too rich and not varied enough
- Unstructured eating patterns, or skipping meals
- ...

For each problem identified, closer analysis may help to understand the cause(s):

- Unbalanced diet on offer
- Failure to perceive satiety or high bitterness sensitivity
- Psychological difficulties
- Inappropriate educative attitudes
- Family habits
- ...

The **resources** of the child/adolescent and of their family will also come to light:

- Varied and balanced diet
- Changes already introduced
- Family and entourage already mobilized
- High motivation
- ...

Defining objectives and organizing follow-up

This is a progressive process, guided by the caregiver, allowing families to find solutions themselves and define **agreed objectives**. These objectives are defined in agreement with the child and their family, taking into account their tastes and family representations of nutrition, linked to their social and cultural context.

The objectives should be limited, progressive, and regularly re-evaluated and adjusted. Indeed, too many changes all at once can be discouraging.

These readjustments can be performed during **scheduled follow-up**: ideally, dedicated consultations with a physician, dietician and nurse trained in therapeutic education, over the long-term.

Depending on the situation, the objectives could relate to:

1. The choice of foods: quality, quantity.
2. Perceptions relating to food: hunger, satiety, desire, enjoyment
3. Food intake: frequency and spread over the day, number, duration, context.

Involving the child and their family

It is of paramount importance that the parents and/or other adults responsible for the child/adolescent be involved in any interventions. The child/adolescent him/herself rarely has a say in the grocery shopping and diet on offer, and should not be placed in a situation where it is impossible to implement the proposed objectives.

Depending on the age of the patient, the health professional should address their advice primarily towards the parents (for small children) or to the child or adolescent himself/herself. Different objectives can be proposed for each group. For instance, the child could agree to give up eating biscuits between meals, while the parents could try to avoid keeping an abundance of biscuits in the cupboard.

For very small children (2-3 years), most often before the early adiposity rebound, management strategies

focusing on nutrition are mainly for preventive purposes, for children at particularly high risk. The advice will be same as for any child of this age, particularly with no restriction on carbohydrate or lipid consumption but a return to portion size normal for age.

Main difficulties and therapeutic objectives

The choice of foods

Quality first: a balanced diet

A balanced diet is synonymous with **good health** and provides useful **benchmarks** regarding the level of consumption of each food group that is sufficient to meet the body's needs in terms of macro- and micro-nutrients in order to function optimally. Having a balanced diet implies eating a wide variety of different foods, adapting quantities to one's needs. In other words, **eat everything, but in moderate quantities**. All types of food have their rightful place in a balanced diet.

In France, the National Nutrition & Health Programme (Programme National Nutrition Santé (11)) has defined 8 main benchmarks:

1. Fruit and vegetables: at least 5 a day
2. Dairy products : 3 a day
3. Carbohydrates: at every meal according to appetite
4. Meat, fish and eggs: 1 to 2 portions a day
5. Fats : limited amounts
6. Sugary foods: limited amounts
7. Salt : limited amounts
8. Water : Unlimited, during and between meals

Most young people are familiar with these recommendations. However, being aware of what a balanced diet comprises does not always equate with applying that knowledge in practice.

In an increasing number of families, **economic and financial aspects** also have to be taken into consideration. Indeed, the priority for many families with financial difficulties is simply to provide enough food for the child not to go hungry, and to make them happy by providing the foods and drinks they like, which are often very rich and of little good in nutritional terms. A specific approach that encompasses these economic aspects needs to be proposed in such cases. The values of each individual family need to be respected, without imposing one's own values and choices.

Although young people who are overweight may not have a balanced diet, the imbalance is not always necessarily the cause of the weight problem. It is not uncommon to encounter youngsters who are very fond of junk food yet remain thin, while others pay attention to their diet yet gain weight regardless.

Excess weight arises from a dysfunction of the regulation of energy intake, and not necessarily from the choice of foods.

Nonetheless, it is important during the initial work-up to pay special attention to **highly energy-dense**

foods, since limiting their consumption contributes to an overall reduction in intake, e.g.:

- Fatty foods: potato chips, fried foods, deli meats, biscuits, cooking juices...
- Soft drinks: fruit juices, sodas...

Depending on their age, children can be encouraged to seek out these foodstuffs themselves in their diet (by analyzing the weekly food diary, for example). In conjunction with the child and their family, suggestions can be proposed as to how and by what such products could be replaced, in order to reduce consumption.

Simple messages citing equivalences could be suggested, as follows:

- One plate of French fries is the energy equivalent of 3 plates of mashed potatoes, or 5 plates of steamed potatoes.
- 1.5 liters of soda or fruit juice contains the equivalent of 35 to 40 sugar lumps.
- 1 handful of peanuts contains 3 tablespoons of oil.

In parallel, a professional dietician could advise the child's family or persons responsible for the meals on creating balanced menus, guiding grocery shopping, choosing appropriate cooking methods and learning new recipes. The children will thus discover how to eat a more balanced food with pleasure.

- **However, no food should be completely prohibited:** Indeed, forbidding certain foods may induce or strengthen a secondary phenomenon of loss of control in the child/adolescent (10). Being deprived of a foodstuff that they like may in fact incite the child to eat it in large quantities as soon as it is accessible, and often in secrecy and guilt.
- **So-called “light” foods** – apart from the fact that much of the publicity surrounding them is actually false – are not indicated in children. Often tasteless, they can in fact contribute to increased consumption.
- **In some cases, nutritional deficiencies (Iron, Vit D) coexist with overweight and must be supplemented**

Sugary drinks

Sugary drinks have a particular status, since the calories they contain are not taken account by the body, and these drinks do not bring on a feeling of satiety. Children often get into the habit of consuming sugary drinks quite early – drinking syrup and water, sodas, or fruit juices between or with meals, and often in quite large quantities, reaching several litres per day in some cases. There may sometimes exist a true sugar addiction. Some children consume a large quantity of milk, considered as a healthy beverage by the parents and not as a meal.

Sodas are easily identifiable as items whose consumption needs to be reduced in order to control weight. However, they are **often replaced by fruit juice, which, although perhaps more useful in nutritional terms, provides the same quantity of sugar as sodas.** “Light” drinks, without added sugar and containing sweeteners, do not provide any energy, but contribute to maintaining the taste for sugary drinks, and may have an effect on insulin balance in the body.

The ideal approach is therefore to **progressively replace soft drinks by water**, even sparkling and flavoured waters (lemon juice, mint, fruit infusions...). Soft drinks should be limited to special occasions, and one glass of fruit juice per day. However, in some adolescents who consume large amounts of sodas, temporary replacement with light sodas may be a useful step towards reducing soda consumption.

Quantities

In addition to the qualitative analysis, the quantities consumed should also be evaluated:

- How big is the plate?
- Is the child's helping as big as that of the parents, or other older children?
- Is the child given second helpings systematically any time he/she asks?
- Does the child help him/herself to things from the refrigerator?
- What does the child eat between meals?

Without getting into a detailed calculation of the exact number of calories, basic benchmarks can be used:

- Before the age of 10, the child's needs are less than those of adults.
- Around the age of 10, the child's needs can be equivalent to those of a relatively less active adult woman.
- The needs could increase considerably during growth spurts in puberty, especially for boys with high physical activity levels.

If the quantities consumed during meals appear to be too large, the following objectives can be proposed:

- Avoid systematically giving second helpings, or serve 2 smaller portions
- Serve food in a small plate
- Eat solid food rather than mixed or soft food
- Dietetic accompaniment should also focus on identifying **why the child is consuming quantities of food above his/her needs** in order to help modify the primary factor(s) that is(are) disturbing the energy balance.

Perceptions related to food: hunger, satiety, desire, enjoyment

In the short term, food intake is naturally regulated by the food-related sensations of hunger, fullness and satiety. Hunger and satiety regulate the frequency of food intakes (number of meals per days) and fullness the size of the different intakes. This natural regulation can be disturbed by several factors:

- Genetic and/or epigenetic disturbances: These reach their epitome with such obesity syndromes as Prader Willi syndrome or leptin deficiency, but may also exist outside of identified syndromes or diseases.

- The educational attitude of the family and entourage regarding diet, e.g. too much availability (food freely available, plate over-filled, reward foods, “just one more spoonful for me”....) or too many restrictions (forbidden foods or foods considered to be unhealthy), can result in the child losing their natural ability to adjust their food intakes to their needs (12).
- Family habits in families of “good eaters”.
- Being in the habit of eating quickly, prompting second helpings (about 20 minutes are required for the organism to perceive satiety).
- Eating in front of the television, which can increase intake by 25% through lack of attention to food-related sensations and tastes.
- Environmental factors including food preparation, the size of the portions, “pocket” formats or individually wrapped portions developed by the food industry, which make it tempting to give the same packet to a child, regardless of whether the child is 3, 9 or 13 years of age.
- Psychoaffective factors, such as states of anxiety or stress that can be alleviated by eating.

All of these factors should be envisaged and explored during work-up and management in order to adapt follow-up appropriately.

Accompanying young people to help them re-learn sensations related to food (hunger, fullness, satiety) and taste, and to help them understand their own food behaviours may in some cases be a priority in the treatment of overweight.

This type of approach is proposed more and more often by dieticians and may be helpful for young people in the long term. However, this type of approach is not suitable for children who suffer from a real lack of satiety, in whom quantities must be deliberately limited.

Food intakes

Meals

Meals are a specific time of pause dedicated to eating, and are spaced out throughout the day according to the customs of each society. In Europe, meals follow the traditional model of 3 meals per day, to which a snack in the afternoon may also be added for children and adolescents. The relative importance of each meal is variable from one country to another.

Regular mealtimes are necessary. In this way, the child learns the food-related sensations of hunger, fullness and satiety. The regularity of meals probably also plays a role in the physiological regulation of food. Indeed, a relation has been shown between overweight and regularity of mealtimes, whereby skipping meals contributes to overweight (13). In particular, eating breakfast appears to confer a protective effect, and people who regularly eat breakfast regulate food intake better during the day.

The conditions in which the meals are taken are also important: where the meals are eaten, how long they last, the presence or not of a television, the atmosphere, waiting for everyone to be served before starting to eat, waiting for everyone to finish before leaving the table, the number and order of the courses, all contribute to conditioning the child’s attitude to food. For example, children learn by copying

their parents. It is the adult's role to decide on the menus and prepare the food, and to lay down a structuring framework, whereas the child's own sensations will fix the quantities according to their tastes and appetite.

Parents are not the only actors in this process. From an early age, depending on the child-minding solution chosen for the child (crèche, child-minder, grandparents...), the child is confronted with other models and other rules that may sometimes be contradictory.

Furthermore, due to constraints imposed by the parents' professional activity and the cost of child minding, **a growing number of children eat at least one meal alone**, most often breakfast (40% of children aged 12-14 in France), but also the afternoon snack or even lunch. This needs to be taken into account when accompanying young people with weight problems, particularly so as not to place the child in a situation that proves to be too difficult for them. For instance, the parents could get help preparing meals in advance for the child, avoiding too many available temptations.

- **Reintroducing regular mealtimes** may be an objective for some families: eating at the table, all together, at more or less regular times can alone suffice to reduce food intakes and consumption of the richest foodstuffs.
- **Eat slowly, and avoid watching television while eating.**
- **Eating breakfast** may also be an objective, but without upsetting the habits of the child's lifestyle: being the only member of the family to eat breakfast can be difficult for a child. If the child is small, it is the habits of the family that will set the example and incite the child to eat breakfast. If the child is slightly older (after 8 to 10 years), he/she will need to understand the utility of breakfast, for example by explaining that it will help to keep going without hunger pangs until lunchtime.
- If the child is not hungry in the morning, is it perhaps because the evening meal is too copious? Making changes to the evening meal (the parents' role) can help to boost appetite in the morning.
- If the child agrees to eat something at breakfast time, a drink, yoghurt or even biscuits can be a good starting point, without necessarily imposing a nutritionally ideal

Snacking and compulsions (binge eating)– Eating in secret

Snacking consists of eating food in small pieces, often without appetite. More generally, it means **eating any food or drinks (other than water) between meals.**

Snacking, although it may disturb nutritional balance, is not necessarily deleterious in terms of weight, since the intake at subsequent meals can be naturally adjusted. The deleterious nature of snacking comes from the failure to integrate the energy intake of the snack into the overall intake of the day, since the snacking is not perceived as actually eating. Disconnected from mealtimes, and accompanying many simple activities of daily life (such as walking, reading, watching television...), this type of food intake is often purely mechanical, and not counted in the overall food intake of the day. Therefore, it is not adjusted for in the energy balance of subsequent meals. Consequently, energy intake is increased, and comes to exceed needs, resulting in weight gain, particularly since snack foods are often highly energy-dense.

Precipitating factors can be identified:

- Physiological (hunger or hunger pangs, whether or not related to skipped meals)
- Hedonic (search for pleasure, greed)
- Emotional (response to boredom, search for comfort)
- Social (conviability)
- Environmental (easy availability, advertising).

Snacking can rapidly **get out of control and become a compulsive behaviour** or even bulimia, with serious repercussions on weight and self-esteem. Health professionals should be on the lookout for this phenomenon, especially in adolescents, as it warrants specific management comprising both behavioural and psychological approaches.

Eating in secret can begin very early (5 to 6 years) and needs to be identified early to in order to avoid aggravation. This type of behaviour can start when parental control is too strict, imposing too many limits, even if the ultimate well-intended goal is to help the child control their weight, or when the rules are different for other children in the family (who are allowed to help themselves freely to desired foods). Forbidden foods thus become highly coveted, leading to frustration and exacerbated desire, pushing the child to break the rules. The child will seek out these foods when the parents are absent, or whenever the kitchen is free, or even during the night. In order to avoid being caught red-handed, the desired foods are eaten quickly, and with accompanying feelings of guilt.

- **If the notion of snacking comes up during the interview**, the caregiver should first create a favourable context for discussion of the subject, and try to understand the reasons for it, in order to be in a position to help the child in practical terms. The caregiver should avoid simply giving advice recommendation that snacking be limited or stopped altogether. This only serves to reinforce the feelings of guilt that the child feels when this same instruction given by the parents is not obeyed.

Hunger or desire to eat ? Greed? Boredom? Sadness ? Understanding the circumstances in which food is consumed can help advise the child.

- If snacking occurs after a skipped meal, or a meal that was too light, a suitable solution could be to re-organise mealtimes.
- If the desire is too great when confronted with a profusion of foods, then the child's entourage needs to change the foods on offer.
- If the motive is boredom, then a behavioural approach aimed at finding alternative remedies for the boredom could be useful.

Lastly, snacking may also reflect a state of sadness, anger or other emotion, or be related to anxiety or depression. A specialised consultation in psychopathology may be required in such cases.

Diets

Low-calorie diets of any type are deleterious and inefficacious in the long term because they lead to a secondary rebound. Going on a diet at 16 years of age significantly increases the risk of being obese at 30 years of age. In adults, 80% of subjects return to their original weight one year after the end of a diet, and

this same phenomenon is observed in adolescents. In a recent expert consensus document (9), the ANSES (French Agency for Food, Environmental and Occupational Health & Safety) underlined the deleterious nature of diets. Too important restrictions on energy intake during infancy and puberty leads to a slowing down of growth and development linked to nutritional deficiencies. As in adults, psychological repercussions are frequent, particularly depression and loss of self-esteem related to failures, and this can ultimately lead to compulsive food behaviours or bulimia.

Any diet is a set of constraining rules that do not respect either the nature of the person, or their tastes and rhythms.

- **Constraints** in terms of times and quantities do not respect the natural sensation of hunger, or the choice of foods, leading the dieter to eat foods they do not particularly like in order to feel full (green beans instead of pasta, an apple instead of a piece of chocolate).
- **Cutting out** foods the dieter likes because they are considered to contribute to weight gain, be it fatty foods (potato chips, cheese, aperitif crackers) or sweet (biscuits, chocolate, sweets, sodas), or even meals (totally or partially, such as eating only salad or only meat).

This manner of eating is far removed from ordinary habits and cannot be maintained for the long term, particularly for a youngster who is the only one having to follow the diet, and is constantly exposed to temptation. The indications for diets are therefore reserved to exceptional situations, such as a need for rapid weight loss in view of surgery.

The temptation is great for many youngsters to “go on a diet”, and this attitude is often promoted by the media. Accordingly, **30% of youngsters aged 11 to 15 years** who participated in a survey for Health Behaviour in School-aged Children (HBSC) in 2010 (14) stated that they were on a diet, or needed to lose weight, although 11% were overweight and 5% underweight in this sample. Girls are more often affected than boys, and the number of girls stating that they are on a diet doubled between the ages of 11 and 15, from 9.4% to 18.8%.

Take-Home Message

- Dietetic management should involve the child (according to their age), the adolescent, and the family or entourage in a progressive process allowing families to find solutions themselves and define agreed objectives.
- Each child/adolescent is unique and has their own dietary habits.
- One must not try to change everything at once.
- Restrictive diets below energy requirement are dangerous.
- No foods should be forbidden, but the highly energy-dense foods need to be reduced.
- Liquid calories and hidden fats must be identified and limited.

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