

MANAGING CHILDHOOD OBESITY: A COMPREHENSIVE APPROACH

Is obesity in children a problem in South Africa? This comprehensive article looks at the evidence.



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Nelia Steyn has been active in the field of nutrition research since 1980. Her areas of research are related to the field of chronic diseases of lifestyle, particularly type 2 diabetes, obesity and other issues relating to a healthy lifestyle. She also has extensive teaching and community-related nutrition experience. She currently serves on the board of SASPEN and is a member of numerous other committees, including chairperson of the Education Committee of the Board for Dietitians of the Health Professionals Council.

In South Africa overweight and obesity are not restricted to any one population group or socioeconomic group. The South African Youth Risk Behaviour Study (www.mrc.ac.za/healthpromotion/healthpromotion.htm) showed that overweight and obesity are very prevalent (30% in females and 9% in males) in 13 - 19-year-olds. In black, white and Indian girls the prevalence was 30%, 34% and 41%, respectively. Furthermore the National Food Consumption Survey (www.sahealthinfo.org/nutrition/scientific.htm) showed that nationally, overweight and obesity are almost as prevalent as stunting (17% v. 19%, respectively) in children aged 12 - 107 months. The burgeoning problem of obesity in children is an international one that health professionals everywhere have to address.

Obese children often grow into obese adults. For the child who is obese at 6 years of age the probability of obesity in adulthood exceeds 50%, particularly if the parents are overweight. Apart from the physical discomfort and physiological abnormalities, the obese child frequently suffers from discrimination and often develops depression and low self-esteem. This in turn may result in poor school performance and a negative attitude towards self-achievement.

In 2003 Summerbell *et al.*² undertook a Cochrane systematic review on interventions for treating obesity in children. The authors evaluated 18 randomised controlled trials including 975 participants and concluded: 'There is a limited amount of quality data on the components of childhood obesity that favor one programme over another... We conclude that no direct conclusions can be drawn from this review with confidence.' Recently, another Cochrane review by Cambell *et al.*³ on interventions for preventing obesity in children drew similar conclusions. These studies echo the helplessness sometimes faced by health professionals when they are dealing with obesity. However, there are a few success stories. This article presents some basic principles that can lead to successful outcomes.

WHEN SHOULD INTERVENTION BE INSTITUTED?

Since the determination of body mass index (BMI) in children is not linear, BMI percentiles rather than cut-off points should be used to diagnose obesity. The weight classification is: normal weight \geq 5th and \leq 85th percentile; at risk for overweight \geq 85th to \leq 95th percentile and overweight \geq 95th percentile. These percentiles can be downloaded from the Center for Diseases Control (CDC) web site at www.cdc.gov/epiinfo/ and can be used to track children accordingly. For general practitioners or paediatricians it is important to weigh and measure the child at least once a year in order to assess the child's growth and weight status over time.

National Guidelines of the Department of Health indicate that if children are aged between 2 and 7 years, and have no complications, weight should be maintained. As increases in length occur there will be some weight loss.

Table I. Age-specific cut-off points for overweight and obesity (Cole *et al.* *BMJ* 2000; 320:1-6)

Age (years)	BMI cut-off for overweight in boys	BMI cut-off for obesity in boys	BMI cut-off for overweight in girls	BMI cut-off for obesity in girls
5	17.42	19.30	17.15	19.17
6	17.55	19.78	17.34	19.65
7	17.92	20.63	17.75	20.51
8	18.44	21.60	18.35	21.57
9	19.10	22.77	19.07	22.81
10	19.84	24.00	19.86	24.11
11	20.55	25.10	20.74	25.42
12	21.22	26.02	21.68	26.67
13	21.91	26.84	22.58	27.76
14	22.62	27.63	23.34	28.57
15	23.29	28.3	23.94	29.11
16	23.30	28.88	24.37	29.43
17	24.46	29.41	24.70	29.69
18	25.00	30.00	25.00	30.00

However, if there are complications (raised blood pressure, raised blood lipids, insulin resistance and orthopaedic problems) weight loss is necessary. In children over 7 years weight loss should be started when the child's BMI lies above the 95th percentile. A second and quicker choice would be to use the International Obesity Task Force BMI cut-off values for obesity (Table I). This is a quick screening method if a doctor does not have access to the CDC tables.

Exclusive breastfeeding is proposed as a protective factor against obesity, and pregnant women who have a family history of obesity should be encouraged to breastfeed until their child is 6 months of age.

WHICH PROGRAMME WORKS?

A successful weight management programme needs to incorporate ALL the following:

- healthy eating habits, including a moderate energy-restricted meal plan
- becoming physically more active and less sedentary
- having a supportive family environment
- employing some type of behavioural intervention.

When a health professional is faced with an overweight or obese child

they have to accept that this is going to be a long-term problem that requires considerable expertise in meal planning, and advice on food and nutrients. The patients will want to know details about foods and dietary choices which the medical practitioner may not be able to give them. After an initial assessment, it will be necessary to refer the patient to a dietitian and it may additionally be necessary for the family to consult with a psychologist if there is evidence of an eating disorder or other psychological problem.

A HEALTHY ENERGY-RESTRICTED MEAL PLAN

A child should *not* be placed on diet. The treatment goal for the overweight child should be weight maintenance, which gives the child time to grow into his/her weight. If the child has already exceeded his/her adult weight a very slow weight loss of 2 - 4 kg per year is recommended.

The principles of a healthy diet are outlined by the International Obesity Task Force and the Department of Health in South Africa and should be used in a dietary plan for overweight children. These include a diet which:

- is high in fruit, vegetables and whole grains
- is low in fats and sugar
- has moderate energy restriction.

One example of a successful weight loss programme in children aged 6 - 12 years is the stoplight (robot) diet. This includes 3 different categories of food items which the client has to learn to use in either unlimited, moderate or restricted amounts. The first category is *green-light* foods, in which use is unrestricted because foods are low in fat, sugar and energy; the second category includes *yellow-light* foods which are essential for health but should be eaten in moderation since they are more energy-dense; and finally, *red-light* foods, which are restricted to 4 portions a week and which have to be eaten away from home. The energy values of this diet vary from 900 to 1 300 kcal/day. As part of the intervention programme the child/parent is asked to keep a record of all foods eaten. This makes the child and parents aware of the quantity and quality of foods being consumed.

An adapted version of this diet is provided in Table II. It is a fairly simple method of weaning children off unhealthy options and allowing them to choose freely among low-energy, low-fat, low-sugar items. This teaches them how to make healthy choices and how to change their lifestyle accordingly. The principles of a healthy diet can also be linked to the food-based dietary guidelines that have been developed to teach South Africans healthy dietary principles

Table II. **A South African adaptation of the stoplight diet used by Epstein and Squires in 6-12-year-old children (1988)**

Green-light foods Liberal use	Yellow-light foods Moderate use	Red-light foods Restricted use
Lettuce	Grilled fish	Fried eggs
Tomatoes	Stewed fish	Fried meat/chicken/fish
Cucumber	Grilled chicken (no skin)	Battered meat/chicken/fish
Boiled vegetables (no fat or sugar added)	Stewed chicken (no skin)	Whole milk and products
Green salad without dressing	Tuna (in brine)	Whole milk cheese
Raw vegetables	Pilchards	Sweets and chocolates
Diet cold drinks	Grilled or stewed lean red meat (fat trimmed)	Regular cold drinks
Rooibos tea	Potatoes	Crisps and savoury snacks
Artificial sweeteners	Sweet potatoes	All fried foods
Deciduous fruits	Eggs (not fried)	Cakes, cookies, pastries
Citrus fruits	Low fat milk	Syrup, jam
Berries	Low fat cheese	Sugar
Popcorn (unbuttered)	Low fat yoghurt	Nuts
Herbs	Brown rice	Salad dressing/oil
	Pasta	Mayonnaise
	Brown bread	Cream
	Legumes	Peanut butter
	Tropical fruits	White bread & rolls
	Fruit juice	Pies
	Low-fat salad dressing	White rice
	Maize porridge	Ice cream
	Sorghum porridge	Processed meats
	Wholegrain breakfast cereal	

Table III. **Food-based dietary guidelines for South Africans older than 7 years⁵**

Adaptations for weight loss	Rationale for this guideline
<ul style="list-style-type: none"> • Enjoy a variety of foods (from green & yellow light categories) 	<p>This ensures that the child meets all his/her micronutrient needs, particularly vitamins A, B and C, iron and calcium</p>
<ul style="list-style-type: none"> • Be active 	<p>Utilises extra energy and fat stores</p>
<ul style="list-style-type: none"> • Make starchy foods the basis of most meals (in allowed amounts from green & yellow light foods) 	<p>Starches form the staple part of the diet. Choices should be high in fibre and low in sugar and fat</p>
<ul style="list-style-type: none"> • Eat plenty of vegetables and fruits every day (from green light foods) 	<p>Provide fibre and micronutrients, particularly folate, vitamin A and vitamin C</p>
<ul style="list-style-type: none"> • Eat dry beans, peas, lentils and soy regularly (in moderate portions) 	<p>These foods are high in fibre, protein and iron and low in fat</p>
<ul style="list-style-type: none"> • Chicken, fish, milk, meat or eggs can be eaten daily (should be low-fat, skimmed, fat trimmed and not fried) 	<p>These foods are good sources of protein, iron, calcium and vitamin B₁₂. Low-fat products contain less saturated fat and cholesterol</p>
<ul style="list-style-type: none"> • Eat fats sparingly (rather grill or stew foods) 	<p>Fats are the highest source of calories</p>
<ul style="list-style-type: none"> • Use salt sparingly 	<p>Because of the risk of elevated blood pressure</p>
<ul style="list-style-type: none"> • Drink lots of clean, safe water 	<p>Helps to drink water instead of soft drinks</p>
<ul style="list-style-type: none"> • If you drink alcohol, drink sensibly (not relevant to children) 	<p>Adolescents need to be aware of the high energy density of alcoholic drinks</p>
<ul style="list-style-type: none"> • Use food and drinks containing sugar sparingly and not between meals 	<p>These foods are low in nutrients and high in calories. Also risk of dental caries</p>

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(Table III). Even simply providing patients with these easy guidelines can be potentially motivational. Practitioners should go through them with the parents and overweight child. The fact that the medical practitioner emphasises these principles carries a lot of weight with patients and will reinforce what the dietitian tells them.

DECREASING SEDENTARY BEHAVIOUR AND INCREASING PHYSICAL ACTIVITY

Sedentary behaviour is one of the main causes of weight increase in children. Physical activity is necessary to increase the amount of energy used by

the body and it has other benefits for weight loss (Table IV). Numerous studies have linked increased time spent watching television to weight increase in children. The American Academy of Pediatrics recently recommended that time spent watching TV and video should be restricted to less than 2 hours per day. Since snacking is frequently associated with watching television, this is also a way of reducing food intake.

The American Heart Association recommends that children and adolescents should accumulate 30 - 60 minutes of age-appropriate activity on most days of the week. Such age-appropriate activity occurs as vigorous bursts lasting 10 - 15 minutes interspersed with periods of rest. Ideally children should try to participate in activities in the community or at school on most days of the week. This also includes playing with other children in safe places daily. Children should be encouraged to engage in physical activity by making walking and cycling part of their routine. Parents are important role models and can enjoy fun activities with their children by encouraging exercise.

Having a healthy diet alone is not as effective for weight loss as a combination of the two. Parents need to negotiate an activity plan with their children. This is likely to evolve around television viewing time, which can be used as a reward for being active. There are many chores around the house that involve physical activity and these can also be included in a daily activity plan. Obviously compliance will be best when the child is involved in activities that he enjoys, so efforts

should be made to maximise these opportunities.

BEHAVIOURAL INTERVENTIONS

Diet or physical activity alone cannot bring about the necessary desirable changes in behaviour, but should form part of a framework that includes measurable goals reinforced with daily tracking of the desired behaviour changes. Incentives should be used as a motivation for sustaining behaviour changes, after first identifying behaviour goals for diet, for physical activity and for family support.

Daily tracking of behaviour goals is essential for maintaining adherence to the diet. Age-appropriate incentives should also be part of the programme and a family member should be responsible for monitoring the child throughout. A dietitian will set desired goals for the diet and physical activity while the doctor should support and motivate these efforts. Every patient will need an individualised programme, which takes time to develop in consultation with the family.

OTHER DIETARY APPROACHES TO WEIGHT LOSS IN CHILDREN

Recently 2 new diet fads have entered the dieting foray, namely the low glycaemic index diet and the low carbohydrate (Atkins) diet. The reduced glycaemic load diet allows the client to select food items that have a low glycaemic index, i.e. they contribute glucose more slowly to the blood and produce a flatter glucose curve. The low carbohydrate diet is one that has a very high protein and fat intake and a very low starch intake. These diets are not recommended, since there have been few studies on children and fewer long-term studies. Furthermore, they are more complicated to use, more expensive and not always culturally acceptable or sustainable.

From a pharmacological perspective, Orlistat was approved for use in ado-

Table IV. **Benefits of regular physical activity**

- Exercise promotes the loss of fat tissue and limits the amount of muscle tissue lost during weight reduction
- Exercise may prevent the fall in metabolic rate experienced when dieting and with ageing
- Regular exercise may limit appetite
- Exercise reduces the likelihood of relapse or regaining lost weight
- Exercise, independent of weight loss, assists in the management of diabetes and hypertension

lescents by the Food and Drug Administration in 2003, based on the results of a 52-week randomised controlled, double-blind trial. This research showed a modest improvement in the weight status of the Orlistat-treated group. Orlistat acts by blocking absorption of fat in the intestine by inhibiting lipase activity. It has the potential to block absorption of up to 30% of dietary fat. Since it may interfere with the absorption of fat-soluble vitamins (A, D, E, K), a daily multi-vitamin supplement should be provided for someone using Orlistat. Another drug used for the treatment of obesity in adults, sibutramine hydrochloride, is not recommended for use in children.

CONCLUSION

Obesity in children requires concerted and comprehensive management on 4 different fronts:

- a healthy meal plan
- a physical activity programme
- support from family members
- behavioural modification techniques to adopt and maintain a healthier lifestyle.

To find out about a dietitian in your area contact ADSA, tel (011) 447-4187 or NICUS, tel (021) 938-9106.

References available on request.

IN A NUTSHELL

Overweight and obesity are very prevalent (30 - 40%) in young women aged 13 - 19 years in South Africa.

Nationally, in children 1 - 8 years, overweight and obesity are as common as stunting (17% and 19%, respectively).

BMI cut-off points and CDC percentiles can be used to determine overweight and obesity in children.

Exclusive breastfeeding protects against overweight and obesity in children.

A successful weight management programme should include a healthy meal plan, increased physical activity as well as a supportive family environment.

The stoplight diet has been shown to work with children and can be used in South African children.

The American Heart Association has proposed guidelines for physical activity in children.

Exercise, independent of weight loss, assists in the management of diabetes and hypertension.

A healthy meal plan should include plenty of fruit and vegetables, be low in fats and sugar and be moderately restricted in energy.

The low glycaemic index diet is not currently recommended as a method of weight loss in children.



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