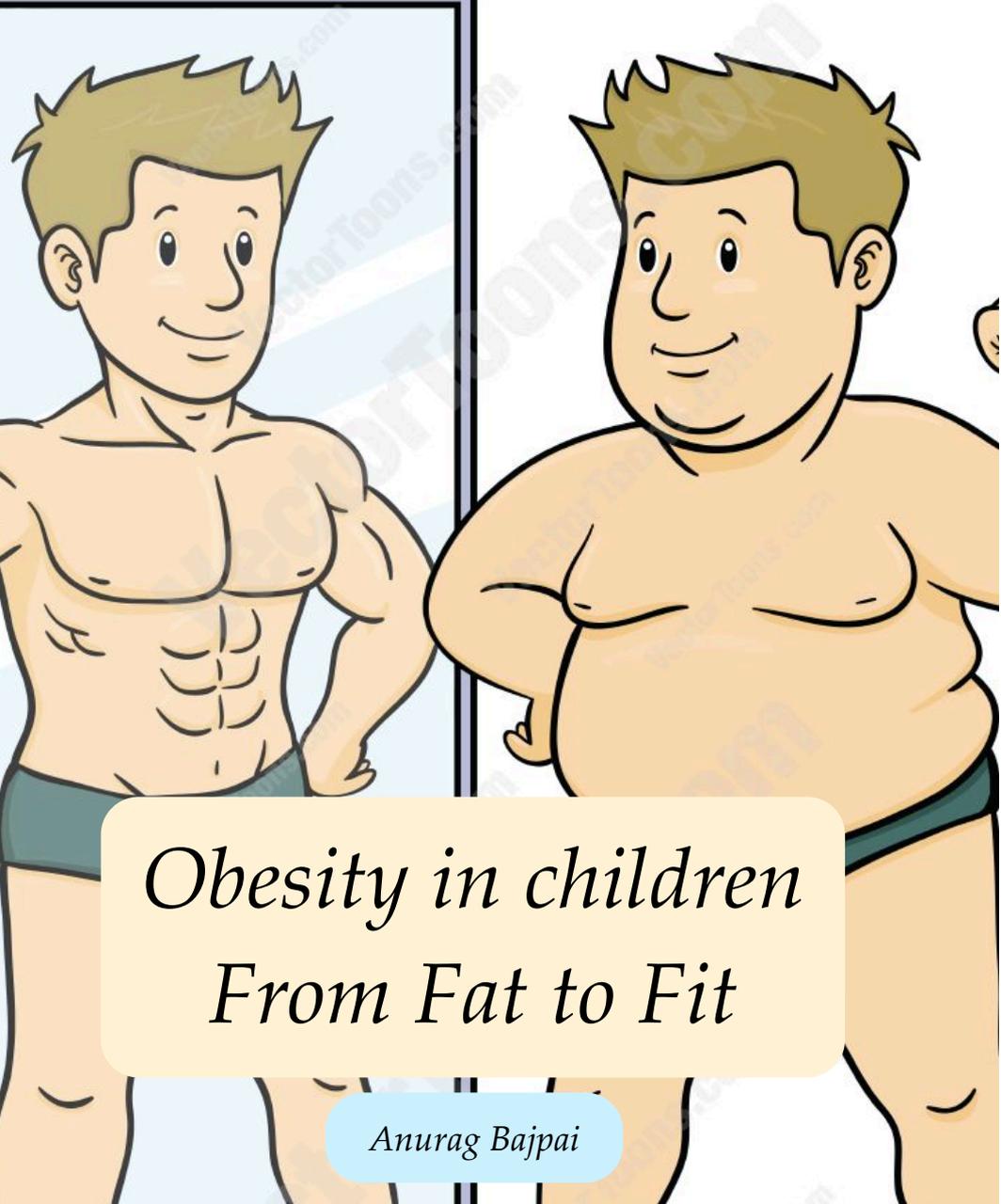




GROW India

Growth & Obesity Workforce



Obesity in children From Fat to Fit

Anurag Bajpai



GROW India

Growth & Obesity Workforce

*Childhood Obesity
From Fat to Fit*

Towards a fitter and stronger India

Dr Anurag Bajpai, MD, FRACP
Pediatric & Adolescent Endocrinologist,
Regency Hospital Limited, Kanpur

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GROW Society

Regency Hospital Limited, A2 Sarvodaya Nagar Kanpur, UP, 208001

Website- www.grow-india.org, Email grow_india@yahoo.com

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Growth & Obesity Workforce

Childhood Obesity- From Fat to Fit

Obesity amongst children and adolescents has emerged as a major public health problem. Over 20% children attending public schools in India are overweight or obese. This is really challenging as obesity is associated with diabetes, high blood pressure and diseases affecting the heart, liver, lungs and joints. These diseases earlier found in adults only, have been increasingly identified in children and adolescents. Treating obesity at this age is crucial as 80% of obese adolescents become obese adults. Management of childhood obesity is challenging and requires long term efforts on the part of the child, family and the treating team.

“Childhood obesity- From Fat to Fit” is an effort in empowering families coping with childhood obesity to wage this battle against the disorder. The book focuses on day to day issues faced by these children and provides simplistic solutions to the same. The book is aimed to be a tool to assist trainers and nutritionists impart knowledge to families with childhood obesity. Complimentary resources like educational videos, home posters and detailed discussions on individual issues are available online. We hope that this small effort of ours would help children with obesity win their battle.

Dr Anurag Bajpai,

Pediatric & Adolescent Endocrinologist,

General Secretary, GROW Society



GROW India

Growth & Obesity Workforce



Physician Awareness



30 workshops, 3 courses

Teacher Sensitization



Growth monitoring in 20 schools

Patient Support



Four patient support groups

Public Awareness



Dept of Pediatric Endocrinology, Regency Hospital Limited, A2 Sarvodaya
Nagar, Kanpur, 208001, Email- grow-india@yahoo.com

Obesity in children

From Fat to Fit

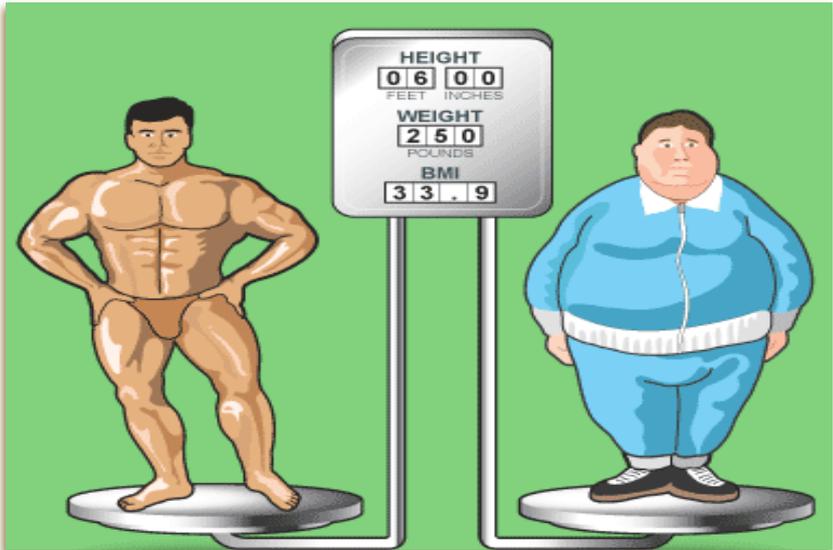
Table of contents:

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Making a plan.....	14
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Physical activity.....	25
Inactivity.....	28
Treatment.....	29

What is obesity?

How is obesity measured?

Obesity means increased body fat and not just increased weight. Muscular people with increased weight are thus not obese. It is assessed by Body mass index (BMI).



What is BMI (Body mass index)?

BMI is a marker of obesity.

$$\text{BMI} = \text{weight kg} / \text{height m}^2$$

BMI > 85th percentile overweight

<input checked="" type="checkbox"/> Boy <input type="checkbox"/> Girl	Years	3	Months	4
Your Height			Your Weight	
Feet	2		Pounds	
Inches	11		28	
Centimeters	88.9	BMI: 16.1 Normal weight 58th Percentile	Kilograms	
			12.7	

Exercise

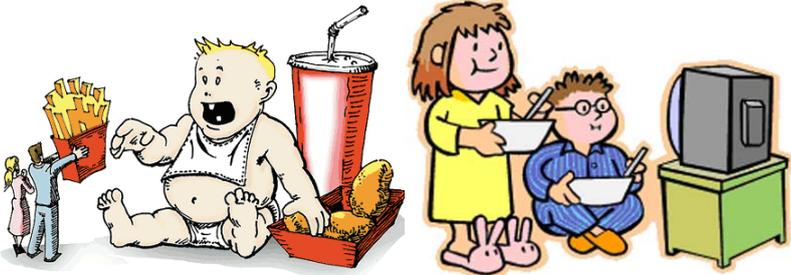
Measure your height and weight. Calculate your BMI

Visit www.dranuragbajpai.com to check your BMI status

What causes obesity?

What causes obesity?

In most children obesity is not because of a disease but due to unhealthy eating and reduced amount of physical activity.



Dietary causes

Missing breakfast and snacking.
Eating while watching television.
Junk food consumption.

Life style causes

Screen time more than one hour.
Sleep less than eight hours
Activity less than 1 hour

Fact



Overweight children are far more likely to become overweight adults than are children who maintain normal weight through adolescence

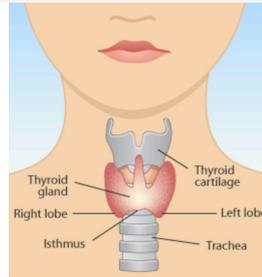
Diseases causing obesity

When to think of disease?

If a child is short, not doing well in school or has rapid weight gain.

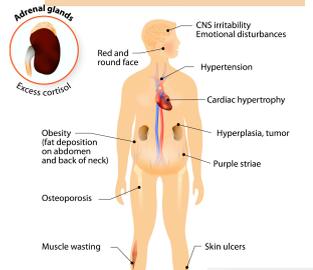
Hypothyroidism

Low thyroid levels
Growth failure
Poor school performance
Coarse skin



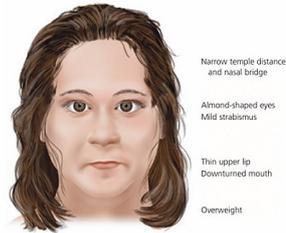
Cushing syndrome

High cortisol levels
Round facies
Pigmentation
Growth failure



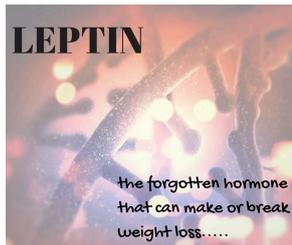
Prader Willi syndrome

Genetic defect
Extremely increased hunger
Short hand and feet



Genetic causes

Very early onset of obesity.
Rapid weight gain.
Family history



When to worry about obesity?

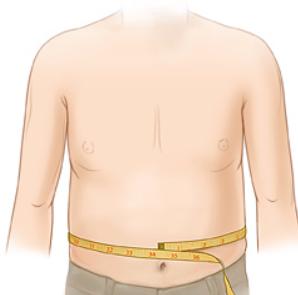
Acanthosis nigricans

Blackening of skin
Back of neck, axilla
Shows insulin resistance
Risk for diabetes



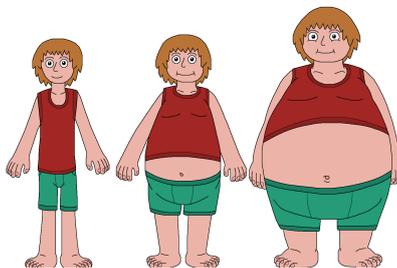
Abdominal obesity

Increased waist size
Suggests abdominal fat
Risk for complications
More important than BMI



Rapid progression

Very fast weight gain
Marker of disease
Complications



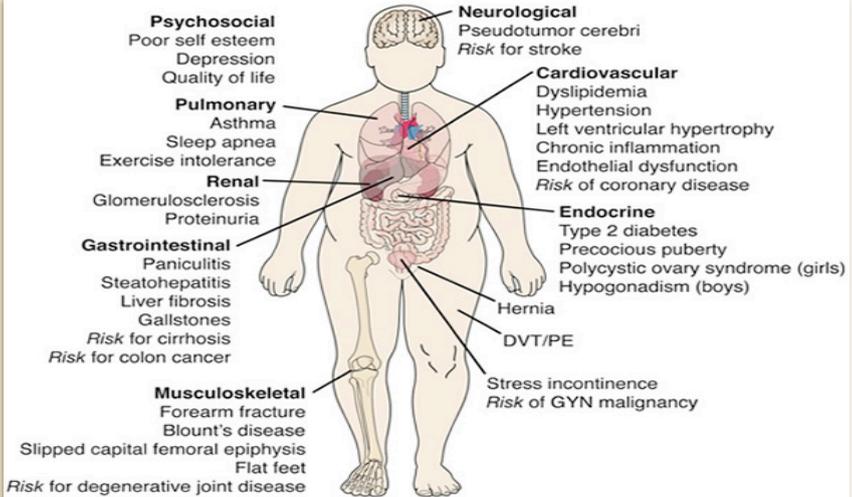
Family history

Obesity, DM, heart disease
Risk of adult obesity
More risk of complications



Why worry about obesity?

Obesity effects every part of body with 30% complication rate



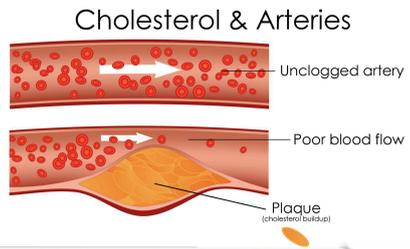
Type 2 Diabetes

High sugars
 Long term complications
 Need for long term treatment



High cholesterol

Deposited in blood vessels
 Heart disease in long run
 Need regular treatment



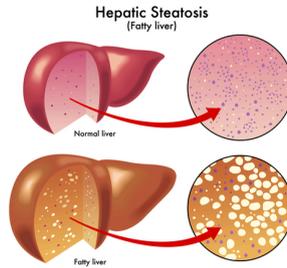
Fact

Adult life style diseases are now common in children

Why worry about obesity?

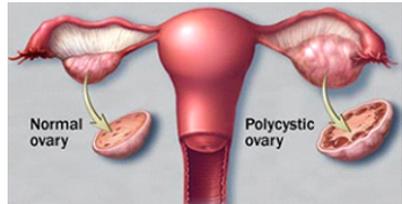
Fatty liver

Liver dysfunction
Vomiting, abdominal pain
Liver disease in long run



Ovarian problems

Irregular periods
Unwanted hair growth
Pimples and hair loss



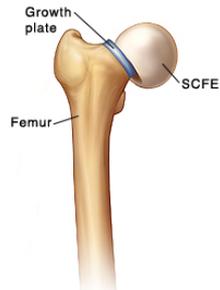
Sleep apnea

Snoring while sleeping
Day time sleepiness
Lethargy
Breathing difficulty



Slipped hip bone

Increased waist size
Suggests abdominal fat
Risk for complications
More important than BMI



Management plan

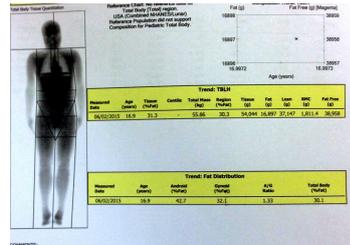
Diagnostic workup

Blood sugar (Pre & post glucose)
Lipid profile
Liver function tests
Hormone tests (If needed)



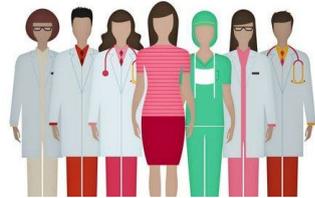
Abdominal fat (DEXA)

Risk factor for disease
Distribution important
For response to treatment



Multidisciplinary team

Physician
Nutritionist
Physical trainer



Building plan

Long term
Sustainable
Objective
Based on consensus



Fact

Systematic plan is essential for appropriate management

Weight loss- How much, how fast?

Slow but sustained loss

Initial goal to stabilize weight
Usually less than 1 kg/month
5-10% over 6 months
Sustained life style changes



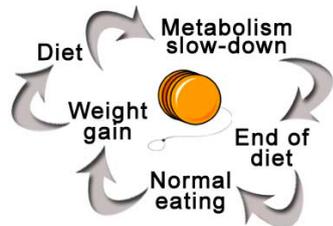
Problems of rapid weight loss

Growth retardation
Effects school performance
Rapid weight regain



Yo Yo dieting

Fluctuating weight
Erratic dieting pattern
Worse than no weight loss



Weight assessment

Monthly for three months
Three monthly for one year
Six monthly thereafter



Message

Rapid weight loss should be avoided in obese children

Nutrition

What are food components?

Food consists of components that play important role in body. Major components include carbohydrate, protein and fat. Minor components include vitamins, minerals and iron.

	CARBS	PROTEIN	FAT
Why we need?	Main source of energy	Essential for growth, tissue repair, muscle	Nerve and tissue, hormone
How they are used?	Breakdown into glucose.	Alternate source of energy	Concentrated source of energy
Where to get from?	Bread, roti, fruits , vegetables, milk, sugar	Meat, poultry, egg, milk, cheese, nuts, beans	Butter, oil, nuts, mayonaise

Food components in common meals

Food Source	Carbohydrate Content	Protein Content	Fat Content
Bread, cereal, rice, pasta, starchy vegetable, etc. 1 slice or ½ cup serving	Approximately 15 grams	Approximately 2 grams	Very little naturally occurring
Fruit – 1 small piece, ½ cup	Approximately 15 grams	None	None
Vegetables ½ cup non-starchy	Approximately 5 grams	Approximately 2 grams	Very little naturally occurring
Meat, fish, poultry, cheese, eggs 1 oz. Serving	None	7 grams	Variable
Milk, yogurt 1 cup serving	Approximately 12 grams	Approximately 8 grams	0-8 grams, depending on selection
Cakes, cookies, pie, pastries, etc.	High! (variable)	Small amounts	High! (variable)
Snack foods, chips, crackers	High! (variable)	Small amounts	High! (variable)
Sugar, molasses, syrup, honey	High!	None	None
Fats	None	None	High! (variable)

Fruits and vegetable

COLOR YOUR PLATE

Red

- Tomatoes
- Red peppers
- Watermelons



Yellow & Orange

- Papayas
- Carrots
- Oranges
- Rockmelons



Green

- Green leafy vegetables
- Honeydew melons
- Kiwis
- Broccoli



White

- Cabbage
- Cauliflowers
- White turnips
- Bananas



Purple

- Plums
- Purple grapes
- Eggplants



The good eating guide

What to do?

Regular meals
Drink lots of water
Have family meals

What not to do?

Watching TV while eating
Snacking
Missing breakfast

Age specific nutritional recommendations

Age (Years)	Gender	Sedentary (Not Active)	Moderately Active	Active
2-3	Male or female	1,000	1,000	1,000
4-8	Male	1,200 – 1,400	1,400 – 1,600	1,600 – 2,000
	Female	1,200 – 1,400	1,400 – 1,600	1,400 – 1,800
9-13	Male	1,600 – 2,000	1,800 – 2,200	2,000 – 2,600
	Female	1,400 – 1,600	1,600 – 2,000	1,800 – 2,200
14-18	Male	2,000 – 2,400	2,400 – 2,800	2,800 – 3,200
	Female	1,800	2,000	2,400

5532-a-day
Perfect portions for toddler tums

Drinks
Offer 6-8 drinks a day

Examples of foods and toddler portion sizes:

- 5 -a-day Starchy Foods** (Rice, bread, pasta & cereals)
 - 1/2 slice bread
 - 1/2 rice cakes or oat cakes
 - 2-3 tbsp breakfast cereal
 - 1-3 tbsp mashed potato
 - 2-4 tbsp cooked pasta/rice
- 5 -a-day Fruit & Vegetables**
 - 1/2-2 tbsp raisins
 - 1-1 banana
 - 3-3 grapes
 - 1/2-2 tbsp peas
 - 1/2-2 tbsp broccoli
- 3 -a-day Dairy Foods** (Milk, cheese & yogurt)
 - 1 beaker of milk (100ml)
 - 1 pot of yogurt (125ml)
 - 1 cheese triangle
- 2 -a-day Protein Foods** (2 portions if child is vegetarian) (Meat, fish, eggs, beans & nuts)
 - 2-3 tbsp chickpeas, kidney beans, shell, lentils or beans
 - 2-4 tbsp cooked mince/meat

Guide to number of portions across the day in meals and snacks

2 Portions if child is vegetarian

© The Nutrition Society



Sample meal plans

Meal	Exchange	0-3 yr	4-6 years	6-9 years	> 9 yr
Early morning	Toned milk Almonds	1/2 cup 5-6	1 cup 5-6	1 cup 5-6	1 cup 5-6
BF	Milk/curd	1/2 cup	1 cup	1 cup	1 cup
	Wheat Oat dalia	1/4 med bowl	1/2 med bowl	1 med bowl	1 med bowl
	Options Boiled egg Cornflakes Brown toast Veg roll	1 1/2 cup 1 slice 1 small	2 1 cup 1 slice 1 medium	2 1 cup 2 slices 2 medium	2 1 cup 2 slices 2 large
Mid morning	Options Buttermilk Sprouts Chana chaat	1/2 cup 1/2 sml bowl 1/2 sml bowl	1 cup 1 sml bowl 1 sml bowl	1 cup 1 sml bowl 1 sml bowl	1 cup 1 sml bowl 1 sml bowl
Lunch	Options Chapati/daal Missi roti Besan cheela Vegetable khicdi Rice	1 1 small 1 small 1 bowl sml 1/2 katori	2 2 small 2 small 1 med bowl 1 katori	2 2 small 2 small 1 med bowl 1 katori	2 2 small 2 small 1 med bowl 1 katori
Early evening	Milk	100 ml	150 ml	200 ml	250 ml
Late evening	Options Roasted chana Besan cheela Brown sandwich Poha	1 handful 1/2 1 1/2 cup	2 1-2 2 1 cup	2 1-2 2 1 cup	2 1-2 2 1 cup
Dinner	Options Chapati/daal Missi roti Besan cheela Vegetable khicdi Rice	1 1 small 1 small 1 bowl sml 1/2 katori	2 2 small 2 small 1 med bowl 1 katori	2 2 small 2 small 1 med bowl 1 katori	2 2 small 2 small 1 med bowl 1 katori
Bedtime	Milk	100 ml	150 ml	200 ml	200 ml

Nutritional plan

Recommendations

Healthy normal diet
Avoid undue restriction
Consistent pattern
Do not miss meals

Meal plan

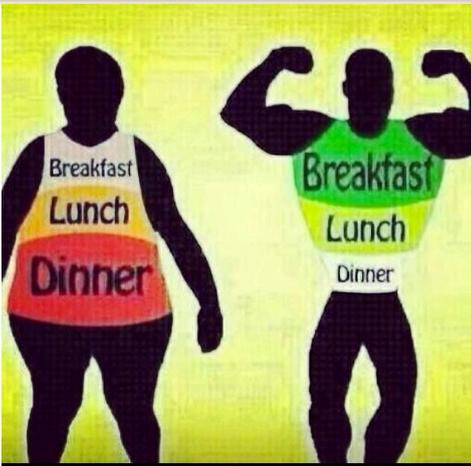
Good breakfast
Reasonable lunch
Early dinner
Avoid snacking

The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



Meal distribution



BREAKFAST LIKE A KING

LUNCH LIKE A PRINCE

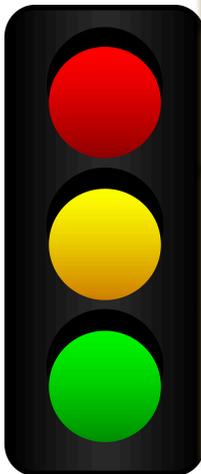
DINNER LIKE A PAUPER

Meal plan

Eat healthy, be healthy

Food class	Currently taking	Replace with
<i>Dairy products</i>	Full cream milk Butter, Cheese, Ghee	Skimmed milk Low fat butter, white butter
<i>Oil</i>	Ghee, saturated fat	Sunflower oil, refined oil
<i>Fruits</i>	Mango, pineapple, grapes	Apple, orange, guava
<i>Cereal</i>	Rice Poori, paratha	Wheat, oat Phulka
<i>Drinks</i>	Cold drink, juices, lassi	Mattha, Lemonade
<i>Snacks</i>	Burger, pizza, chips Dosa Samosa, kachori	Sandwich, roasted potato Idli, utthapam Dhokla

Traffic light approach



Food items	Frequency
Pizza, burger, samosa Cold drink, fruit juices Ice cream	Monthly
Poorti, parantha Fried rice, Potato Mango, pineapple, grapes	Weekly
Chapati, daal, rice Green vegetables, salad Apple, orange, guava	Daily

Cutting calorie

Meals

- Regular meals
- Salads at start of meals
- No TV while eating
- Fixed portion size
- No repeated servings

Parties

- Eat salad before party
- Avoid cold drink and starters
- Limit portion size
- One dessert only



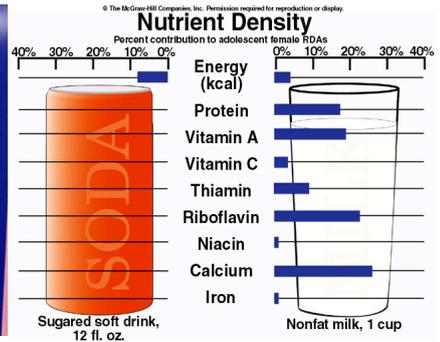
Cut junk food



Healthy drinking

Which drink is healthy?

Water is the most healthy drink. Drink as much as possible.
 Low fat milk and butter milk (mattha) are reasonable alternatives
 Avoid carbonated drinks and fizzy drinks as they have high sugar



Juices are not always healthy

High calorie with very little nutrition. Take whole fruit instead



Eating out

Tips for eating out

Always have something before leaving home.

Drink lot's of water and eat salad before main course



Avoid foods that are breaded and deep-fried. They are high in fat and calories.

Split your food order with a friends and cut the calories in half!

Choose water, milk or 100% fruit juice instead of soda.

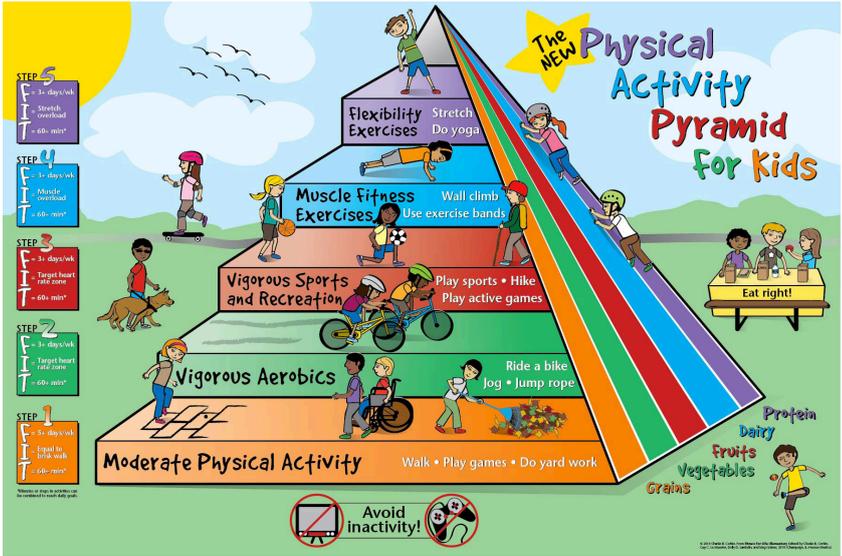
Steps to Success

Physical activity

Building a program

Regular physical activity and reduced inactivity.

Increased routine activity.



life is why™

Physical Activity in Kids

At least 60 minutes of moderate- to vigorous-intensity aerobic activity **Every day**



Physical activity- To do or not to do

Do

Minimum 60 minutes daily
Simple exercises
Avoid gap of more than 2 days
Moderate level of exercise

Don't Do

Sudden increase in exercise
Erratic pattern
Weight bearing exercises
Over eating after exercises



What EXERCISE EQUIPMENT Should really be called



Nordic TRICK

PERSONAL DRAINING

Precaution

Drink lot of water
Stop if there is injury
Cautious if not feeling well
Do not exercise when sick

Simple measures

Walk to school
Use stairs not elevator
Do self work at home
Post dinner family walk

Fact

Regular exercise and activity is must for weight loss.

Healthy living guide

Follow- 10-2-1-0 plan

10-2-1-0

Goals for STAR Kids!

10: Sleep at least 10 hours a night.

A regular schedule and bedtime routine can help kids get the sleep they need!

2: No more than 2 hours per day
of screen time.

Screen time means time watching TV, DVDs, videos and movies, or playing games on a TV, computer, or handheld device. It's not time doing homework on a computer.

1: Get at least 1 hour of moderate
to vigorous physical activity per day.

If 1 hour feels like a lot now, help your child start slowly and build up!

0: Drink water. Have
zero sugary drinks.

*Have water when thirsty, with meals,
or any time!*

Work together,
pick a goal,
offer encouragement.

You can do it!

STAR

*These are recommendations for 5-12 year olds.

Cut down on inactivity

What all?

Television, computer, mobile, tablet, telephone,

Why?

Increased eating, reduced calorie loss, impaired satiety



How much?

Less than one hour a day
Less than 2 hour on holidays
Less than 40 minute at a time
Increased physical activity

How?

Activity break in between
Alarm while watching television
No mobile, tablets for children
Supervised use of devices

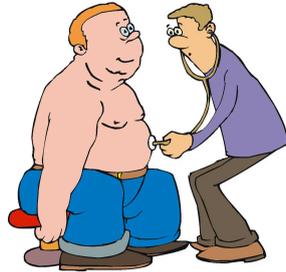
Fact

Stopping TV while eating is effective in reducing weight

Treatment for obesity

When?

Morbid obesity
Complications of obesity
Life threatening disease



Medicines

Decreased fat absorption
Not absorbed in body
Fat in stools if taking oily food
Take calcium, vitamins as well



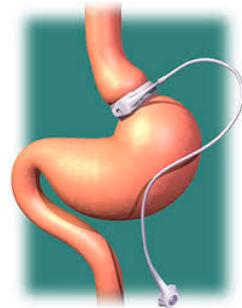
Complication treatment

High sugar- Metformin
High cholesterol- Fat lowering
Sleep apnea- CPAP mask
Fatty liver- Liver medicines



Surgery

Only in rarest of situations
After growth is completed
Not a cosmetic procedure
Lap banding preferred



Fact

Obesity treatment should be given only in rare situations.

Useful links

Dr. Anurag Bajpai Awareness about Pediatric Endocrinology

Home About - Appointments - Pediatric Endocrinology - Information Center - Media Centre -

www.dranuragbajpai.com

Book Appointment

Authored two books related to pediatric endocrinology

Know Dr. Anurag Bajpai



MBBS (AIMS), MD (Pediatrics, AIMS)
FRACP (Pediatric Endocrinology Australia)
Consultant, Pediatric & Adolescent Endocrinologist

[read more](#)

Resources for Patients / Visitors



Patients / Visitors can visit information center of this portal and download resources in form of educational booklets and disease pamphlets.

[read more](#)

Resources for Healthcare Professionals



Healthcare Professionals can get connected for information on upcoming conferences and also can download presentations, guidelines & articles.

[read more](#)

Patients Health Care Professionals News and Media Contact

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SERVING TYPE 1 DIABETIC CHILDREN

<http://www.diaboworld.com/>

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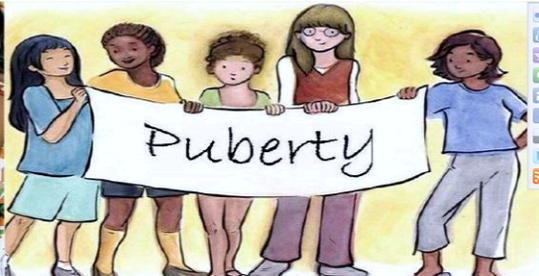
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Growth & Obesity Workforce

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Road To Growth



www.grow-india.org

PEDIATRIC EMPOWERMENT

As it is evident from the social fabric of our society or in the greater scale societies irrespective of demography a child is surrounded by parents, teachers, neighbourhood and social



PEDIATRIC ENDOCRINOLOGY

Pediatric Endocrinology is the branch of Pediatrics dealing with diseases caused by abnormal functions of Endocrine Glands in children up to 18 years of age.



SCHOOL INITIATIVES

- a. Awareness
- b. Empowerment



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Community
Growth and Obesity Workforce

- Normal growth
- First year- 25 cm
 - Second year- 12 cm
 - 2 years puberty & menstruation

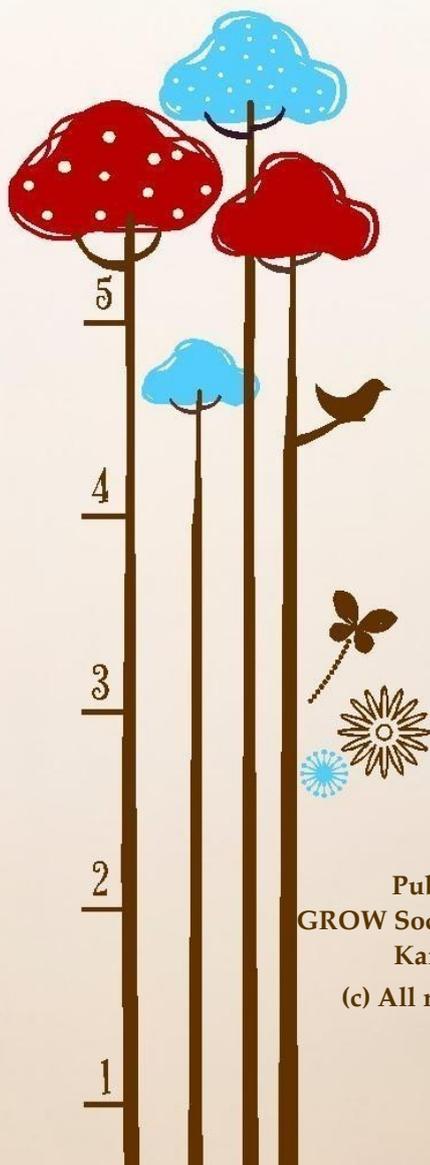
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