Diabetes Foundation (India)

The foundation of Diabetes Foundation (India) was laid down by Late Prof. MMS Ahuja, Ex. Prof. & Head, Endocrinology, Metabolism & Diabetes, All India Institute of Medical Sciences, New Delhi in the year 1987. The organization is presently working under the Presidentship of Prof. M G Karmarkar, Former Head, Department of Laboratory Medicine, All India Institute of Medical Sciences, New Delhi, and the able guidance of Senior Scientific Advisor, Prof. Anoop Misra, Director & Head, Department of Diabetes and Metabolic Diseases, Fortis Hospitals (New Delhi and NOIDA), Padma Shri and Secretary Mrs. Rekha Sharma, Senior Vice President, VLCC Healthcare Limited, and Former Chief Dietician, All India Institute of Medical Sciences, New Delhi.

The Objectives of the Foundation are:

- To conduct research in regard to the problem of diabetes in the country that may include epidemiology, clinical profile or therapeutics including indigenous drugs, yoga.
- To provide a comprehensive clinical day care centre for care of diabetics, with laboratory facilities for requisite investigations and provision of mental and counseling.
- To promote educational material for diabetics and to make them self-sufficient in day-to-day management of the disease.
- To evolve data bank on literature relating to diabetes in the country and to establish a library on the subject.

Diabetes Foundation (India) has been actively involved in the education of general public, school children, parents and school teachers regarding obesity; healthy lifestyle, balanced nutrition, and physical activity. Educational school programs are being conducted to disseminate information on the abovereferred aspects. The organization regularly organizes lectures on obesity, diabetes, heart diseases and other non-communicable diseases in Delhi and various other cities of India. Diabetes Foundation (India) continues to provide medical education to doctors through group discussions and lectures on diabetes and obesity. It also runs a nutritional counseling unit for diabetics wherein dietary and physical activity counseling is given free of cost.

World Diabetes Foundation (WDF), Denmark

The World Diabetes Foundation (WDF) is dedicated to support prevention and treatment of diabetes and its related diseases (such as obesity) in developing countries. The foundation focuses on the awareness of diabetes and its related diseases, works for prevention of diabetes and its complications, education and training of patients and health care professionals, research and the promotion of comprehensive care and monitoring of diabetes.

It has funded several projects focusing specifically on awareness about diabetes and its related diseases, education and capacity building at local, regional and global levels and acts as a catalyst to build relations among different stakeholders such as government, diabetes organizations, hospitals and authorities to ensure continued existence of the initiatives after the completion of the WDF-funded projects. The foundation seeks to bring diabetes and its related diseases higher on the global agenda by entering into collaboration with recognized institutions in the areas of health, diabetes and development aid. Through partnerships the foundation aims to raise global awareness regarding the epidemic of diabetes and its related diseases.

Project “MARG” : The Path

Medical Education for Children / Adolescents for Realistic Prevention of Obesity and Diabetes and for Healthy Aging

(A Health Awareness Program for the Prevention of Obesity & Diabetes through Healthy Eating and Active Lifestyle)

Office of Diabetes Foundation (India)

Principal Investigator : Prof. Anoop Misra, Director & Head, Dept. of Diabetes & Metabolic Disease, Fortis Hospitals, New Delhi & Noida (Padma Shri)

Co-Investigator : Mrs Rekha Sharma, Senior Vice President, VLCC Healthcare Ltd., Former Chief Dietician, AIIMS, New Delhi.

Tel No : 91-11-41759672; 91-11-26537991

Email : anoopmisra.marg@gmail.com

Promoted By : Diabetes Foundation (India)

Funded By : World Diabetes Foundation (Denmark)
Some common instructions to follow while reading this booklet

Directions have been mentioned on each page, specifying that the page is for child and/or parent.

References for each table have been mentioned at the bottom of the same.

Diseased persons are requested to consult their physician at the earliest.

The nutrient values mentioned are in approximation.

Try to score your lifestyle pattern as mention at the end of the booklet (page 21).

Your are kindly requested to practice the suggestions mentioned to attain a healthy lifestyle.

Abbreviations used

- BMI : Body Mass Index
- BP : Blood Pressure
- CVD : Cardio Vascular Disease
- DBP : Diastolic Blood Pressure
- DFI : Diabetes Foundation (India)
- gm : Grams
- IDDM : Insulin Dependent Diabetes Mellitus
- IOTF : International Obesity Task Force
- Kcal : Kilo calorie
- kg : Kilogram
- m^2 : Meter^2
- M A R G : Medical Education for Children/Adolescents for Realistic Prevention of Obesity and Diabetes and for Healthy Aging
- mg : Milligram
- ml : Millilitre
- mmHg : Millimeters of mercury
- NIDDM : Non Insulin Dependent Diabetes Mellitus
- RDA : Recommended Dietary Allowances
- SBP : Systolic Blood Pressure
- T1DM : Type 1 Diabetes Mellitus
- T2DM : Type 2 Diabetes Mellitus
- tbs : Tablespoon
- tsp : Teaspoon
- WDF : Word Diabetes Foundation

Preferably Practice....

- Make a Sunday morning walk a group habit.
- Organize a walking school bus with neighbours to walk the kids to school together, if the school is nearby.
- Do activities that make you feel warmer and breathe a little harder.
- If you happen to miss out your daily walk don’t get disturbed, instead go up and down the stairs continuously for 5-10 minutes and make up for the loss.
- In the early stages of a program, concentrate on participating regularly and enjoying yourself. Don’t rush or force things. Look for improvement over the long term, not overnight.
- There are 1440 minutes in a day... You can easily schedule at least 30 of them for physical activity.

To achieve a healthy lifestyle try the play way!

Add & Deduct the mentioned points to your score book for each of these statements:

**ADD (+)**
- 5 points for a 30 minute walking / running / jogging done in a day.
- 5 points for having 2 glasses of milk in a day.
- 4 points for eating at least 2 fruits daily.
- 4 points for avoiding any junk food preparation (burger/samosa / bread pakora)
- 4 points for finishing up your school tiffin.
- 3 points for not using any vehicle for near by destination, instead walking it out.
- 3 points for using staircase instead of elevators/ escalators.

**DEDUCT (-)**
- 5 points for missing/skipping your physical education period
- 5 points for frequently consuming junk food (every alternate day).
- 5 points for sitting in front of TV for more than 2 hours.
- 4 points for eating more than 1 fried food in a day.
- 4 points for eating less than 1 glass of milk in a day.

*Calculate your points and compare it with the score board

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 13</td>
<td>Beware!! Either start bringing positive changes in your daily habits or prepare yourself for facing the consequences</td>
</tr>
<tr>
<td>13-18</td>
<td>Gear yourself to make the maximum possible changes in your daily routine to lead a healthy life</td>
</tr>
<tr>
<td>24-14</td>
<td>Not bad, you have the willingness to follow the fitness rules. Try including more of the healthy habits and be a star.</td>
</tr>
<tr>
<td>25-30</td>
<td>Give yourself a star &amp; full credit of following a healthy regime.</td>
</tr>
</tbody>
</table>

Less than 13 Beware!! Either start bringing positive changes in your daily habits or prepare yourself for facing the consequences.
During your free periods or office breaks why not try this…
Try stretching your body and burning few calories while sitting in office/free periods in school.

- Hamstring back, to avoid those backaches
- Push the wall & stretch your calves
- Stretch out your ankles

During your free periods or office breaks why not try this…
Try stretching your body and burning few calories while sitting in office/free periods in school.

Health

Are you healthy?

Being healthy does not only mean free from diseases because health is a state of complete physical, mental and social well being and not just merely absence of disease or infirmity. So check your health status today!

How can you stay healthy?
The right way to achieve health is by:
- Eating a balanced diet
- Adequate physical activity
- Reducing stress

What is a balanced diet?
A diet that contains the proper proportions of carbohydrates, fats, proteins, vitamins, minerals, roughage and water necessary to maintain good health.
In other words, it is a diet that contains adequate amounts of all the above mentioned nutrients required for healthy growth and proper functioning of your body.

You Must Know

- Fat accumulated around your abdomen is more dangerous than fat around the hip. So maintain your waist circumference < 90 cm (Adult males) & < 80 cm (Adult females).
- Try to maintain your waist circumference to less than half your height.
- Body weight is directly proportional to the calorie intake for any normal individual (Energy Intake - Energy Expenditure = Weight Gain)
- Weight reduction should be planned at a gradual pace, not more than 0.5 to 1 kg per week.
- Diet restriction alone cannot result in permanent healthy weight loss; it should be combined with moderate amount of exercise.
- Refined foods and empty calories from sugar not only increases your body weight but also increases your blood sugar and triglyceride levels.
  - Refined Foods = Body Weight + Blood Sugar + Triglyceride blood
- 300 kilocalories in excess/day can increase your body weight approximately by 4 kg in one year.
- One egg yolk (yellow portion) provides 210 mg of cholesterol. (Daily recommendation for cholesterol should be less than 300mg)
- 1 tsp of pickle gives you approximately 1.5 gm salt.
- Do not get carried away by terms like low fat, high in fiber, enriched with nutrients, diet foods etc. on packaged food items, instead have a thorough look on the nutritional labeling as these terms are often misleading.
- Increasing your cold drink consumption shortens your teeth life.
Check how much your body requires

Recommended Dietary Allowances (RDA) for different age groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Body Weight (Kg)</th>
<th>Energy (Kcal/d)</th>
<th>Protein (gm/d)</th>
<th>Fat (gm/d)</th>
<th>Calcium (mg/d)</th>
<th>Iron (mg/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-3 years)</td>
<td>12.2</td>
<td>1240</td>
<td>22</td>
<td>25</td>
<td>400</td>
<td>12</td>
</tr>
<tr>
<td>(4-6 years)</td>
<td>19.0</td>
<td>1690</td>
<td>30</td>
<td>22</td>
<td>600</td>
<td>26</td>
</tr>
<tr>
<td>(7-9 years)</td>
<td>26.9</td>
<td>1950</td>
<td>41</td>
<td>22</td>
<td>600</td>
<td>41</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10-12 years)</td>
<td>35.4</td>
<td>2190</td>
<td>54</td>
<td>22</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>(13-15 years)</td>
<td>47.8</td>
<td>2450</td>
<td>70</td>
<td>22</td>
<td>600</td>
<td>50</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10-12 years)</td>
<td>31.5</td>
<td>1975</td>
<td>57</td>
<td>22</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>(13-15 years)</td>
<td>46.7</td>
<td>2060</td>
<td>65</td>
<td>22</td>
<td>600</td>
<td>30</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(16-18 years)</td>
<td>57.1</td>
<td>2640</td>
<td>78</td>
<td>22</td>
<td>500</td>
<td>50</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(16-18 years)</td>
<td>49.9</td>
<td>2060</td>
<td>63</td>
<td>22</td>
<td>500</td>
<td>30</td>
</tr>
<tr>
<td><strong>Adult Man</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedentary worker</td>
<td>60.0</td>
<td>2425</td>
<td>60</td>
<td>20</td>
<td>400</td>
<td>28</td>
</tr>
<tr>
<td><strong>Adult Woman</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sedentary Worker</td>
<td>50.0</td>
<td>1875</td>
<td>50</td>
<td>20</td>
<td>400</td>
<td>30</td>
</tr>
</tbody>
</table>


---

When you are cooking...
- Use nonstick utensils for cooking.
- Prefer using methods that require less oil like roasting, baking, steaming, boiling etc.
- While making chapatti’s do not sieve the flour, instead add Soy flour or wheat bran to it as it increases the fiber content.
- Pressure cook the food instead of cooking in open pan.
- When preparing noodles/pasta/pizza/cutlet, add lots of vegetables to it.
- To increase the palatability of food, rather than adding extra ghee / butter, just squeeze few drops of lemon before serving.
- When ordering non-vegetarian dishes go for leaner meats like chicken /fish instead of mutton or pork.
- Have low-fat salad dressings (lemon) instead of the full-fat (mayonnaise).
- Use mustard dressing or ketchup instead of mayonnaise.
- Choose water, low-fat milk, lassi, coconut water, soy milk instead of regular sodas.
- If fruit and veggies are available, try to add them into your meal. For example, have cucumber and tomato on sandwiches or burgers or as salads.

When you are at a party...
- Try to to have a platter of salad / fruits before starting with the main meal.
- When choosing curry preparation always pick up pieces rather than the gravy.
- Go for plain water instead of colas/sodas.
- Opt for tandoori / missi roti without butter instead of naan.
- Prefer plain boiled rice instead of pulao/ biryani.
- Instead of having full serving of dessert take only 1-2 spoons.
- Eat your food slowly.

When you are eating out...
- Opt for dishes that are steamed (Idli), baked, grilled or roasted rather than deep fried.
- Order small meals instead of big combinations.
- Opt for salads as starters rather than fries.
- Choose clear soups that are not cream based.
- When ordering non-vegetarian dishes go for leaner meats like chicken /fish instead of mutton or pork.
- Have low-fat salad dressings (lemon) instead of the full-fat (mayonnaise).
- Use mustard dressing or ketchup instead of mayonnaise.
- Choose water, low-fat milk, lassi, coconut water, soy milk instead of regular sodas.
- If fruit and veggies are available, try to add them into your meal. For example, have cucumber and tomato on sandwiches or burgers or as salads.

When you are traveling...
- Take a proper meal before leaving home.
- Don’t rely on roadside greasy options instead pack for yourself lots of fruits.
- Take on the way meals like idli / Bran biscuits and roasted namkeens.
- Instead of aerated drinks (cold drinks) carry tetra packs of flavored milk, lassi and chaach for the journey.

When you are at a party...
- Try to to have a platter of salad / fruits before starting with the main meal.
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- If fruit and veggies are available, try to add them into your meal. For example, have cucumber and tomato on sandwiches or burgers or as salads.
What is Overweight/Obesity?

Today, it is one of the most common problems, and since both the terms are related to fatness, we usually consider them as one. However, Overweight and Obesity are relative terms not synonymous.

- **Obesity** is a condition of excess body fat, i.e., when a person is 20% or more than the ideal BMI (please refer page 5 for details).
- **Overweight** is a condition when a person is 10-12% more than the ideal BMI.

What causes you to be obese?

- **Heredity:** If one or both of your parents are overweight, you also have a tendency to put on weight easily.
- **Diet:** Overeating or too much consumption of calorie dense foods (fried foods, sweets, etc.) makes you obese.
- **Physical Inactivity:** Following a sedentary lifestyle with more emphasis on TV viewing, computers, video games, automated vehicles, and labor-saving devices also results in obesity.
- **Hormonal Imbalance:** Excess/deficiency of certain hormonal secretions (such as thyroid hormone, cortisol hormone) also leads to weight gain.

How to fight obesity?

- **Stay Active & Be Smart**
- **Eat Greens & Be Lean**
- **Avoid Junk & Have Fun**
How can obesity affect your health?

Obesity is a bad news for both mind and body as it can lead to various problems, like:

- Stroke
- Heart disease
- Kidney dysfunction
- Cancer
- Low stamina
- Infertility
- Diabetes
- Hypertension
- Breathing problems
- Depression
- Skin pigmentation
- Facial hair
- Stroke
- Heart disease
- Kidney dysfunction
- Cancer
- Low stamina
- Infertility
- Diabetes
- Hypertension
- Breathing problems
- Depression
- Skin pigmentation
- Facial hair

Some quick rules to follow:

- Eat Slowly
- Drink plenty of fluids
- Avoid frequent snacking in-between meals

Foods to prefer and avoid if you are obese

<table>
<thead>
<tr>
<th>Prefer</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skimmed milk, lasia, buttermilk</td>
<td>Full cream milk &amp; its products</td>
</tr>
<tr>
<td>Whole grain cereals &amp; dal products (Brown bread, porridge, oats, sprouts, husked dal)</td>
<td>Refined cereals and their products (White bread, kichra, noodles &amp; pasta)</td>
</tr>
<tr>
<td>Whole fruits (guava, apple, papaya etc)</td>
<td>Sugar, canned juice, cola (sweetened drinks)</td>
</tr>
<tr>
<td>Green leafy and seasonal vegetables</td>
<td>Potato, sweet potatoes, jimmikand, arbi</td>
</tr>
<tr>
<td>Steamed/roasted food products (Idli, dhokla, roasted chana/ namkeens)</td>
<td>Fried food products (chips, bhathure, samosa, poori, pokora, parathwa, fried namkeens)</td>
</tr>
<tr>
<td>Lean meats (chicken, fish, egg white)</td>
<td>Red meat (mutton, pork)</td>
</tr>
<tr>
<td></td>
<td>Organ meats (liver, kidney, brain)</td>
</tr>
</tbody>
</table>

How much can you burn in an hour?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Kcal burnt per minute</th>
<th>Kcal burnt per 30 minutes</th>
<th>Kcal burnt per 60 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking (4km/h)</td>
<td>3</td>
<td>90</td>
<td>180</td>
</tr>
<tr>
<td>Brisk Walking</td>
<td>5</td>
<td>160</td>
<td>320</td>
</tr>
<tr>
<td>Cycling (15km/h)</td>
<td>6</td>
<td>180</td>
<td>360</td>
</tr>
<tr>
<td>Running (6km /h)</td>
<td>6</td>
<td>175</td>
<td>350</td>
</tr>
<tr>
<td>Swimming</td>
<td>7</td>
<td>215</td>
<td>430</td>
</tr>
<tr>
<td>Table Tennis</td>
<td>4</td>
<td>122</td>
<td>245</td>
</tr>
<tr>
<td>Dancing</td>
<td>6</td>
<td>185</td>
<td>370</td>
</tr>
<tr>
<td>Gardening</td>
<td>5</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Cleaning / Mopping</td>
<td>4</td>
<td>105</td>
<td>210</td>
</tr>
<tr>
<td>Ironing</td>
<td>3</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>Shopping</td>
<td>4</td>
<td>102</td>
<td>204</td>
</tr>
</tbody>
</table>

(All the figures have been rounded off to whole numbers)
You can judge your weight status through BMI (Body Mass Index), which is an indicator of fatness in the body. The BMI values differ according to age and gender. By calculating your BMI, you can easily assess whether you are overweight or not. The calculation involves 4 simple steps:

**Step 1:** Measure your height in meters

**Step 2:** Multiply this number by itself

**Step 3:** Measure your weight in kilograms

**Step 4:** Put the calculated figures in the given formula:

$$BMI = \frac{Weight \text{ in kilograms}}{(Height \text{ in meters})^2}$$

### BMI Cut-offs for Adults for overweight (& obesity) (>18 yrs)

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Overweight if BMI above</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>21.5</td>
</tr>
<tr>
<td>15</td>
<td>21.9</td>
</tr>
<tr>
<td>16</td>
<td>22.2</td>
</tr>
<tr>
<td>17</td>
<td>22.3</td>
</tr>
<tr>
<td>18</td>
<td>23.2</td>
</tr>
<tr>
<td>19</td>
<td>23.2</td>
</tr>
</tbody>
</table>

### BMI Cut-offs for Adolescents for overweight (14 – 18 yrs)

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Overweight if BMI above</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>21.6</td>
</tr>
<tr>
<td>15</td>
<td>22.6</td>
</tr>
<tr>
<td>16</td>
<td>23.7</td>
</tr>
<tr>
<td>17</td>
<td>23.9</td>
</tr>
<tr>
<td>18</td>
<td>23.9</td>
</tr>
</tbody>
</table>

A * denotes adolescence.

### How to incorporate physical activity in your daily life

1. **Start and end each day with a walk around your neighborhood.** Make sure it's a brisk walk.
2. **Do housework, gardening, or yard work at a more vigorous pace.**
3. **Exercise while watching TV.** E.g., ride a stationary bicycle, or perform stretching exercises.
4. **Dance to your favorite music at home.**
5. **Play any sport for at least 10 minutes without stopping.**
6. **When you travel, walk around the train platform, bus stop, or airport rather than sitting and waiting.**

### Easy ways to incorporate physical activity in your daily life

- **Start and end each day with a walk around your neighborhood.** Make sure it's a brisk walk.
- **Do housework, gardening, or yard work at a more vigorous pace.**
- **Exercise while watching TV.** E.g., ride a stationary bicycle, or perform stretching exercises.
- **Dance to your favorite music at home.**
- **Play any sport for at least 10 minutes without stopping.**
- **When you travel, walk around the train platform, bus stop, or airport rather than sitting and waiting.**

### Benefits of physical activity

- **Metabolic Rate:** Helps getting back in shape, Helps to burn calories
- **Blood Pressure:** Helps in improving appearance
- **Blood Cholesterol:** Helps to burn calories
- **Stress:** Helps in improving appearance
- **Confidence:** Helps to burn calories
- **Concentration:** Helps in improving appearance
- **Muscle Mass:** Helps in improving appearance
- **Diet and Physical activity both are equally important for a healthy mind and body.** Here are some points which tell us why adequate physical activity is important for us.

### Physical Activity: Why & How to go for it?

**PHYSICAL ACTIVITY**

- **Concentration**
- **Blood Pressure**
- **Muscle Mass**
- **Confidence**
- **Blood Cholesterol**
- **Stress**
- **Metabolic Rate**

### How to judge your weight status?

Ref: Misra et al, 2006 (unpublished data)

* For children below 14 years consult a physician

### Ref: Misra et al, 2006 (unpublished data)
A 5 Day Sample Menu Plan for your Child

<table>
<thead>
<tr>
<th>Meal</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>Vanilla Shake*</td>
<td>Milk with Cornflakes*</td>
<td>Strawberry Shake*</td>
<td>Oats Porridge with milk*</td>
<td>Semolina Porridge with milk*</td>
</tr>
<tr>
<td></td>
<td>Brown Biscuit*</td>
<td></td>
<td>Toasted Brown Bread</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>with White Butter*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packed</td>
<td>Vegetable Chaat 2**</td>
<td>Tofu Stuffed</td>
<td>Colorful Soy Edi**</td>
<td>Grilled Corn Kebab**</td>
<td>Brown Bread Sandwich**</td>
</tr>
<tr>
<td>Tiffin</td>
<td></td>
<td>Panehsta Carrot &amp; Pea</td>
<td>Coconut Chutney*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vegetable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td>Jeera Rice</td>
<td>Chapati Stuffed</td>
<td>Badam Shake</td>
<td>Pineapple Shake*</td>
<td>Flavored Milk*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capsicum Banana Rait</td>
<td>Grilled Tofu</td>
<td></td>
<td>Grilled Roti Roll**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evening</td>
<td>Cheku Milk Shake*</td>
<td>Chocolate milk*</td>
<td>Badam Shake</td>
<td>Vegetable Soya</td>
<td></td>
</tr>
<tr>
<td>Snack</td>
<td>Vegetable Poha</td>
<td>Vegetable Brown Bread</td>
<td>Grilled Papad</td>
<td>Granules &amp; Pineapple</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upma</td>
<td>Samosa**</td>
<td>Shake Tofu</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td>Missi roti</td>
<td>Rice Sambar Fruit</td>
<td>Chapati Pola Panne</td>
<td>Vegetable stuffed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pea potato curry</td>
<td>Salad</td>
<td>Carrot/ Radish Salad</td>
<td>chapati Soya</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fruit Smoothie</td>
<td></td>
<td></td>
<td>Granules &amp; Pineapple</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cucumber</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tomato Salad</td>
<td></td>
</tr>
</tbody>
</table>

Each day’s menu provides approx. 2000 Kcal energy, 55 gm protein, and 30-40 gm Fat

* Preferably use skimmed milk.
** Recipes as mentioned in pages 12 - 14.
Parents

Steam Corn, and finely diced carrots allow them to cool. Grate cabbage, mash the boiled potatoes and mix all the ingredients after adding salt and pepper to taste. Divide the mixture into small balls of uniform sizes. Put these Kebabs on greased skewer oven sticks) and grill in a preheated oven (at 175°C) for 10 minutes serve hot with curd mint chutney.

Grilled Corn Kebabs
Serving size: 4 pieces, Cooking Time: 10 min, Calorie: approx. 160 Kcal, Protein: 3 gm, Fat: 6 gm

Ingredients:
- Corn: 40 gm
- Cabbage: 20 gm
- Potato: 70 gm
- Carrot: 20 gm


Vegetable Cheela
Mix besan with curd to form a batter of dropping consistency, keep aside and allow it to ferment for 2 hours. Grate carrot and cabbage. Add these to the fermented batter along with seasonings (salt & pepper). Prepare cheela on a non stick tawa. Serve hot with chutney.

Serving size: 2 pieces, Cooking Time: 10 min, Calorie: approx. 176 Kcal, Protein: 8 gm, Fat: 8 gm

Ingredients:
- Besan: 30 gm
- Cabbage: 20 gm
- Carrot: 15 gm

Roast suji (semolina) and soybean flour separately. Make a batter by adding curd and keep for 15minutes. Grate carrot, cabbage and shell peas. Add the vegetables to the fermented batter with salt and pepper to taste. Grease the idli moulds. Put the batter into the moulds and steam for 15 minutes. Serve with coriander chutney.

Serving size: 4 pieces, Cooking Time: 30 min, Calorie: approx. 270 Kcal, Protein: 12 gm, Fat: 10 gm

Ingredients:
- Semolina: 30 gm
- Soy flour: 20 gm
- Carrot: 15 gm
- Cabbage: 15 gm
- peas: 10 gm

Boil milk with rice flour, simmer for 5 minutes add 2 tsp of sugar & allow to cool, add ½ tsp of vanilla essence. Dice apple, pineapple, pear, shell pomegranate & peel orange. Add the fruits to the milk mixture. Put this in refrigerator and serve chilled as dessert.

Serving size: 1 bowl, Cooking Time: 10 min, Calorie: approx. 181 Kcal, Protein: 8 gm, Fat: 0.5 gm

Ingredients:
- Toned Milk: 1 glass (250 ml)
- Rice: 10 gm
- Sugar: 10 gm
- Apple: 20 gm
- Pineapple: 20 gm
- Pomegranate: 40 gm
- Orange: 20 gm

What can diabetes lead to?
Prolonged diabetes can lead to several health problems like:
- Heart Attack: Blood vessels get damaged and this leads to heart attack.
- Blindness/Blurred Vision
- Gangrene/Foot Complications
- Kidney Failure
- Paralysis
- Nerve Damage
- Stroke

How to prevent diabetes?
Maintain ideal body weight
- Eat a well balanced diet
- Reduce intake of fried and junk foods
- Involve in at least 45 min of physical exercise
- Go for regular health check up

Also see things to prefer and avoid in obesity (page: 4)

Children/Parents

Heart Diseases

Heart is an important musculature organ in our body that pumps blood in all the organs.

Heart Disease: This is another major consequence of obesity. It is a disorder that affects heart’s ability to function normally. The most common cause of heart disease is narrowing/blockage (due to fat deposit) of coronary artery which supplies blood to the heart itself.

Arteries are the blood vessels that carry oxygenated blood from the heart to the rest of the body while Veins are the blood vessels carrying deoxygenated blood from various parts of the body back to the heart.

Types of heart diseases:

Heart Attack: When coronary arteries become blocked by fat deposits or a blood clot, part of the heart is starved of oxygen thus leading to heart attack.

Cardio Vascular Disease (CVD) includes diseases of the heart and blood vessels. These are of two main types:

Coronary Heart Disease (CHD): When the walls of coronary artery become narrowed by gradual fat deposits, it is called coronary heart disease.
**Vegetable Patti**

Mix bran & refined wheat flour, add salt and form a stiff dough. Steam green gram sprouts & mix it with grated carrot and cabbage add salt & pepper. Divide the dough into small balls and roll them into thin rounds (approx. 8 cm diameter). Put the sprouts & vegetable mixture in the centre of these rounds and fold it in the shape of potli. Seal it with help of water and put them on a greased idli mould. Steam for 15 min. Serve hot.

**Grilled Papad Samosa**

Steam rajmah with ½ tsp salt. Mash the steamed Rajmah and mix it with grated paneer. Heat ½ tsp of oil in a pan and sauté the mixture, add the seasonings and allow to cool. Cut papad into half (semi-circle), put the mixture in the centre and roll in the shape of samosa, stick the ends with the help of water. Grease the surface with white butter and grill in a pre-heated oven at 175 C for 15 minutes. Serve hot with chutney.

**Brown Bread Sandwiches**

Grate cucumber, carrot and capsicum. Mix it with curd, add salt and pepper and make it into a smooth paste. Cut whole wheat/ brown bread in circular rounds. Spread the vegetable paste evenly on both the rounds and seal the edges with water. Grill it in a preheated oven at 150°C for 10 min or on a non stick tawa for 5 minutes. Serve hot.

---

**Blood Pressure Ranges**


1. **Normal** 120/80mm of Hg
2. **Normotension** SBP <140mm of Hg and DBP <90 mm of Hg
3. **Borderline hypertension** SBP 141 to 159 mm of Hg and DBP 91 to 94 mm of Hg
4. **Hypertension** SBP >160mm of Hg or DBP >95 mm of Hg

**Blood Pressure (BP)** is the pressure exerted by the blood on the walls of arteries.

**Systolic Blood Pressure (SBP)** is the pressure exerted on the walls of the arteries during the contraction phase of the heartbeat. This varies with age, gender and physiological status.

**Diastolic Blood Pressure (DBP)** is the pressure inside the arteries when the heart muscle is relaxed. This is the minimum pressure in the arteries between heartbeats when the heart relaxes to fill with blood.

**Hypertension** (sustained elevated arterial BP) due to narrowing of the arteries caused by fat deposits.

**Foods to prefer and avoid if you are suffering from hypertension**

<table>
<thead>
<tr>
<th>Prefer</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole fruits, sprouts etc, low sodium flavoring agents (lemon, vinegar, tamarind extracts, herbs and spices)</td>
<td>Sodium rich foods like: baking powder/baking soda or foods containing those like: bakery products (breads, burger, pizza etc.), table salt, canned fruits and vegetables, pickles &amp; chutneys.</td>
</tr>
<tr>
<td>Egg white, lean meats (chicken, fish, etc.)</td>
<td>Organ meats (liver, kidney, brain), red meats (muscle, pork), egg yolk</td>
</tr>
<tr>
<td>Refined oil* (intake&lt;3 tsp/day)</td>
<td>Hydrogenated fats (vanaspati, ghee)</td>
</tr>
</tbody>
</table>

*Also see things to prefer and avoid in obesity (page: 4)
Simple to cook.. Tasty to eat

Grilled Rati Roll
Finely chop capsicum, beans, carrot and ghee paneer. Saučé these vegetables in 1 tsp oil. Add salt, pepper, coriander powder and let cool. Prepare a thin roti. Put the seasoned vegetable on this chapati and roll, hold it with the help of toothpicks. Grill on a pre-heated oven for 10 min (at 150°C). Wrap in a tissue paper and serve.

Ingredients:
- Whole wheat flour: 25 gm
- Paneer: 20 gm
- Beans: 20 gm
- Carrot: 20 gm
- Oil: 1 ½ tsp.

Serving size: 1 roll, Cooking time: 25 min
Calorie: approx 225 kcal, Protein: 7 gm, Fat: 12 gm

Timed Roti Roll
Finely chop the vegetables like carrot, beans, capsicum and shell peas. Crack mustard seeds & curry leaves in 1 tsp of refined oil, add the vegetables and sauté. Grind fresh brown bread in grinder and mix it with the sautéed veggies, cook for a while and squeeze fresh lemon juice over it. Serve hot.

Ingredients:
- Brown bread: 25 gm (1 pc)
- Peas: 20 gm
- Capsicum: 20 gm
- Beans: 20 gm
- Carrot: 20 gm
- Oil: 1 tsp.

Serving size: 1 bowl, Cooking time: 10 min
Calorie: approx 157 kcal, Protein: 5 gm, Fat: 6 gm

Tofu Tikka
Mix curd with salt, black pepper, turmeric powder, black cardamom powder and coriander powder and keep aside. Cut tofu, capsicum and tomato in cubes/ different shapes and mix them with the curd mixture and allow to marinate for ½ hr. Put these marinated cubes into greased skewer (oven sticks) and grill in a preheated oven (at 175°C) for 15 min. Serve hot with chutney.

Ingredients:
- Tofu: 80 gm
- Capsicum: 20 gm
- Tomato: 20 gm
- Toned Curd: 50 gm
- Turmeric: ½ tsp
- Black cardamom powder: 1 tsp

Serving size: 4 pieces, Cooking time: 10 min
Calorie: approx 97 kcal, Protein: 9 gm, Fat: 6 gm

Clear Your Doubts...

<table>
<thead>
<tr>
<th>Myths</th>
<th>Fact</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A zero fat diet is excellent for weight reduction.</td>
<td>Some amount of fat in the diet is essential for proper functioning of the body.</td>
</tr>
<tr>
<td>• Vegetable oils cannot increase blood cholesterol because they are cholesterol free.</td>
<td>Vegetable oils do not contain cholesterol but if consumed in excess can cause an increase in total fat intake and too much fat in the diet increases the formation of cholesterol in the body.</td>
</tr>
<tr>
<td>• Only plain sugar increases blood sugar.</td>
<td>All carbohydrates can increase blood sugar but refined foods and sugar increases blood sugar levels rapidly.</td>
</tr>
<tr>
<td>• Those who want to go for weight reduction should frequently skip meals.</td>
<td>For losing weight the healthy way is to have small portions of meals including fruits and vegetables in the form of salads.</td>
</tr>
<tr>
<td>• “Vanaspati” is as good as ghee.</td>
<td>Vanaspati contains “trans fatty acids” which are more harmful than saturated fat present in ghee.</td>
</tr>
<tr>
<td>• Fat free is calorie free.</td>
<td>Foods devoid of fat are usually taken as calorie free but they contain carbohydrates and proteins as well which also contributes to the calorie content of food.</td>
</tr>
<tr>
<td>• Children should be given large amount of desi ghee and butter (saturated fat) for good health.</td>
<td>Excess intake of saturated fat can lead to obesity which can subsequently lead to diabetes at an early age. Thus there should be a balanced intake of all the nutrients including fats.</td>
</tr>
</tbody>
</table>

Some Healthy Alternatives...

<table>
<thead>
<tr>
<th>Food Items</th>
<th>Healthy Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pantha (200 kcal)</td>
<td>Vegetable stuffed chapatti (100 kcal)</td>
</tr>
<tr>
<td>Fried vegetables (140 kcal/100g)</td>
<td>Baked vegetables (50 kcal/100g)</td>
</tr>
<tr>
<td>Fried eggs/omelet (120 kcal)</td>
<td>Poached / hard boiled egg (60 kcal)</td>
</tr>
<tr>
<td>Regular pudding/dessert (150 kcal/serving)</td>
<td>Chilled fruits (40 kcal/pc)</td>
</tr>
<tr>
<td>Mayonnaise dressing (100 kcal/14g)</td>
<td>Lemon dressing (0 kcal) or Yogurt dressing (60 kcal/ 100g)</td>
</tr>
</tbody>
</table>
### Your Calorimeter

#### Food Items

<table>
<thead>
<tr>
<th>Food Items</th>
<th>Amount</th>
<th>Energy (Kcal) (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapati</td>
<td>1 slice (25 gm)</td>
<td>85</td>
</tr>
<tr>
<td>Dry vegetable (with 1 tsp oil)</td>
<td>1 katori (100 gm)</td>
<td>77</td>
</tr>
<tr>
<td>Dal</td>
<td>1 katori (30 gm)</td>
<td>100</td>
</tr>
<tr>
<td>Boiled rice</td>
<td>½ cup (25 gm)</td>
<td>86</td>
</tr>
<tr>
<td>Bread bread</td>
<td>1 slice (25 gm)</td>
<td>61</td>
</tr>
<tr>
<td>Cornflakes with milk</td>
<td>1 bowl</td>
<td>220</td>
</tr>
<tr>
<td>Boiled egg</td>
<td>50 gm</td>
<td>86</td>
</tr>
<tr>
<td>Apple (medium sized)</td>
<td>1 (100 gm)</td>
<td>52</td>
</tr>
<tr>
<td>Bananas (medium sized)</td>
<td>1 (100 gm)</td>
<td>116</td>
</tr>
<tr>
<td>Curd</td>
<td>1 katori (125 gm)</td>
<td>75</td>
</tr>
<tr>
<td>Lassi &amp; 2 tsp sugar</td>
<td>1 glass (200 ml)</td>
<td>79</td>
</tr>
<tr>
<td>Buffalo milk &amp; 2 tsp sugar</td>
<td>1 glass (250 ml)</td>
<td>330</td>
</tr>
<tr>
<td>Tea (50 ml toned milk + 2 tsp sugar)</td>
<td>1 cup (150 ml)</td>
<td>50</td>
</tr>
</tbody>
</table>

**Note:** gm = gram, tsp = tea spoon, ml = milliliter

### Food Items

<table>
<thead>
<tr>
<th>Food Items</th>
<th>Amount</th>
<th>Energy (Kcal) (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooked noodles</td>
<td>1 packet (100 gm)</td>
<td>435</td>
</tr>
<tr>
<td>Samosa</td>
<td>1</td>
<td>150</td>
</tr>
<tr>
<td>French fries</td>
<td>Medium (150 gm)</td>
<td>300</td>
</tr>
<tr>
<td>Pizza (cheese &amp; tomato)</td>
<td>1 slice</td>
<td>250</td>
</tr>
<tr>
<td>Burger</td>
<td>1</td>
<td>330</td>
</tr>
<tr>
<td>Brown bread sandwich</td>
<td>2 slices</td>
<td>194</td>
</tr>
<tr>
<td>Butter popcorns</td>
<td>Regular (35 gm)</td>
<td>160</td>
</tr>
<tr>
<td>Potato chips</td>
<td>1 packet (35 gm)</td>
<td>196</td>
</tr>
<tr>
<td>Sweet biscuit</td>
<td>4 (25 gm)</td>
<td>112</td>
</tr>
<tr>
<td>Plum ice cream</td>
<td>1 scoop (100 gm)</td>
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</tr>
<tr>
<td>Pastry</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>Small chocolate</td>
<td>1 bar (35 gm)</td>
<td>182</td>
</tr>
<tr>
<td>Aerated soft drinks</td>
<td>1 glass (200 ml)</td>
<td>110</td>
</tr>
</tbody>
</table>

**Note:** gm = gram, tsp = tea spoon, ml = milliliter