

Increasing energy intake

- ↑ Portion sizes
- ↑ Snacking and loss of regular meals
- ↑ Energy-dense food (mainly fat)
- ↑ Affluence

Decreasing energy expenditure

- Car ownership
- ↓ Walking to school/work
- ↑ Automation; ↓ manual labour
- ↓ Sports in schools
- ↑ Time spent on videogames and watching TV
- ↑ Central heating [4, 5].

Table 1: 1showing Causes of childhood obesity [6].

Constitutional: Environmental factors (95% cases)
pathological
<ul style="list-style-type: none"> • Endocrinal: Cushing syndrome, deficiency of growth hormone, Hypothyroidism, pseudohypoparathyroidism. • Hypothalamic: Braintumour, radiation after neurosurgery, head injury. <ul style="list-style-type: none"> • Drugs: Antiepileptic drugs, steroids, estrogen • Genetic syndrome: Prader-willi, Laurence –moon-bardet-biedl, Beck with Wiedemann, carpenter syndrome. • Monogenic disorder: Leptin deficiency, or resistance, abnormalities of melavocortin-4 receptor and proconvertase.

Types of Obesity

Generalised obesity: There is excess fat deposition uniformly throughout the body. Over eating is the most common cause. It is characterised by the presence of a ‘double chin’.

Android obesity: It is a type of obesity, which is characterised by excess deposition of fat over the region of the waist.

Gynoid obesity: It is a type of obesity, which is characterised by excess deposition of fat over the region of the hips and thighs.

Superior or central type of obesity: In this type, there is excess fat deposition over face, neck and upper part of the trunk and the arms are thin. This is seen in Cushing’s syndrome [7].

Symptoms

The primary warning sign of obesity is an above-average body weight.

- Trouble sleeping
- Sleep apnoea. This is a condition in which breathing is irregular and periodically stops during sleep.
- Shortness of breath
- Varicose veins
- Skin problems caused by moisture that accumulates in the folds of your skin
- Gallstones

- Osteoarthritis in weight-bearing joints, especially the knees

Diagnosis**Weight and height measurement**

Body mass index (BMI) is a measurement of body fat relative to height. It is identified by dividing the body weight (kg) by the square of height in meters. Though relative weight and BMI correlate with the degree of adiposity, excess weight may be in the form of lean tissue or fat tissue. Hence even heavy muscled athletes would be considered obese by this method [4].

Table 2: Showing Obesity with Body Mass Index

BMI (kg/m²)	Classification	Risk of obesity comorbidity
18.5-24.9	Normal range	Negligible
25.0-29.9	Overweight	Mildly increased
> 30.0	Obese	
30.0-34.9	Class I	Moderate
35.0-39.9	Class II	Severe
> 40.0	Class III	Very severe

Skinfold measurement

The width of subcutaneous skinfold in the biceps, triceps, subscapularis and suprailiacs is measured with calibrated calipers. Nomograms are available to convert skinfold measurements into percentage body fat.

Skinfolds have also been used to measure fat distribution between the trunk and extremities. This is termed fat patterning index. The subscapular-to-triceps skinfold ratio is associated with high rates of diabetes mellitus and ischaemic heart disease [8].

Measurement of waist and hip circumference

Measurement of waist and hip circumference with a tape measure provides the same information as skinfold thickness and is also an estimation of body fat distribution. Both in men and women, high waist/hip ratio is considered a risk factor for ischaemic heart disease, stroke and death. In males, the risk for the disease increases when the waist/hip ratio rises above 1.0, and in females when it rises above 0.8. Subjects with abdominal obesity (android obesity) are at greater risk for cardiovascular complications than those with gluteal obesity (gynoid obesity) [9].

Complications**Cardiovascular disease**

Obesity contributes to an increased incidence of cardiovascular disease not only directly but also indirectly by predisposing to hypertension, diabetes mellitus and hyperlipidaemia.

Obesity results in circulatory changes such as increases in pulmonary and systemic blood volume and increase in stroke volume and cardiac output. The increased workload on the heart leads to dilatation and hypertrophy which predispose to congestive cardiac failure. There is an increase in myocardial oxygen demand; when the supply cannot meet the demand, it results in infarction and death.



Fig 2: Shows in Obesity

Hypertension

Obesity is associated with hypertension, it can be reduced with improvement in weight. Increase in cardiac output and peripheral resistance is responsible for the hypertension. There is evidence to show that both basal and stimulated levels of norepinephrine are increased in obesity. As the body mass increases, arterial pressure rises. Weight reduction not only improves the hypertension but also improves carbohydrate intolerance and hyperlipidaemia, thus diminishing the risk for coronary artery disease.

Diabetes mellitus

Obesity is a common association in NIDDM; however, in most developing countries obesity is seen in less than 50% of patients with NIDDM. Obesity predisposes to carbohydrate intolerance by increasing insulin resistance.

Pulmonary diseases

Significant alteration in pulmonary function occurs in the severely obese and is due to increased oxygen consumption associated with breathing. The extreme form of pulmonary dysfunction is the Pickwick an syndrome or obesity-hypoventilation syndrome which is characterised by somnolence, obesity and hypoventilation. Hypoxaemia and CO₂ retention along with mechanical factors are responsible for the hypoventilation. The sleep apnoea in the obese may be central, obstructive or mixed. Pulmonary hypertension, polycythaemia and corpulmonale result from prolonged pulmonary dysfunction.

Endocrine disorders

In men, there is a consistent reduction in the concentration of total serum testosterone. Obesity is associated with clinical symptoms suggestive of abnormal ovarian function, including irregular menstruation, secondary amenorrhoea, hirsutism, early menarche and delayed menopause. Both in pre and postmenopausal women, circulating androgens from the adrenal gland are converted to oestrogens in the peripheral tissue. This enhanced production of oestrogen in obese postmenopausal women may have a causative role in the high incidence of endometrial carcinomas and low incidence of osteoporosis [4].

Psychosomatic

Depression, Impotency in males, menstrual irregularities [10].

Other complications associated with obesity

Gallbladder disease is the most common digestive disease in obese individuals; it has a progressive and linear risk from a BMI of 20 upwards. Liver abnormalities are described in obesity mainly due to fatty infiltration but, on occasions, associated with fibrosis and/or cirrhosis. Certain forms of cancer are more common in obesity subjects: colorectal and prostate in obese men, carcinoma of the gallbladder, breast, and endometrium in obese women. Osteoarthritis frequently accompanies obesity, while bone density tends to be increased in obese subjects [11].

Management

Low-calorie diet therapy for obesity

Table 3: Showing calorie diet therapy plan [12].

Diet	carbohydrate%	fat%	protein%	Comment
Normal (typical developed country)	50	30	15	
Moderate fat (e.g. Weight Watchers)	60	25	15	Maintains balance in macronutrients and micronutrients while reducing energy-dense fats
Low carbohydrate (e.g. Atkins)	10	60	30	Induction of ketosis may suppress hunger
High protein (e.g. Zone)	43	30	27	Protein has greater satiety effect than other macronutrients
Low fat (e.g. Ornish)	70	13	17	

All patients should be advised to maximise their physical activity, the goal is to lose 0.5 kg/week. Weight loss is highly variable, with patient compliance being the major determinant of success. Compliance is better with moderate relative reductions of 600 kcal in daily calorie intake than with 'fixed' regimes of 1000 kcal intake per day, which may represent a reduction of > 1500 kcal/day in many patients.^[13]

Weight loss of 5-10% of body weight is sufficient for clinically relevant improvements in many risk factors among patients with obesity and risk reduction appears to be dose-related. Magnitude of weight loss at 1 year is strongly associated with improvement in many parameters including blood sugar, blood pressure, triglycerides^[14].

Surgery

Surgical therapy to reduce the volume of the stomach may be successful in the long term in some patients. Procedures to bypass the absorptive surfaces of the intestine have been associated with many complications, the most predictable being nutritional deficiencies. Surgery to remove fat (liposuction), if used alone, is not a long-term solution. However, it may be a useful cosmetic adjunct in patients who are successful with diet and exercise, with or without surgical gastroplasty^[15].

Homoeopathic Approach towards Obesity

The homoeopathic approach towards obesity should be scientific and feasible. Many Homoeopathic remedies have wonderful effect in cases of obesity and overweight. Homoeopathy has a vast scope to offer individuals suffering from obesity not only from life style but also from other diseases which is associated with obesity.

Calcarea Carbonicum

This remedy is indicated mainly for people those who have a tendency of slow metabolism, look chubby, and have excess fat in the abdominal area. These people usually suffer from constipation due to sluggish metabolic activity. Indicated in people who gain weight due to thyroid problems and pregnancy. This remedy can be indicated after proper evaluation of a person^[16, 17].

Phytolacca

Phytolacca mainly acts by regulating the hunger pattern, and aiding proper digestion of food. It also balances the hormones and metabolic process of the body.

Fucus Vesiculosus

This is another excellent remedy for weight loss. This remedy is indicated when the weight gain or obesity is mainly due to hypothyroidism. It is help to weight loss by controlling the thyroid hormone. Like any other remedies, Fucus also helps to maintain the digestion and provides relief from constipation and flatulence. This remedy is usually given in the form of mother tincture which is liquid form^[16].

Antimonium Crudum

This is mainly a homeopathic medicine prescribed for obese children in order to help them lose weight. A suitable candidate for this medicine is a child who possesses extreme irritability, very cross nature, and an aversion to be touched or be looked at. These children also have a marked aversion

to cold bathing. The significant indicator for using this medicine to lose weight is a craving for acidic things like pickles in the child.

Lycopodium

It is one of the most useful homeopathic remedies for fat loss. This is also used mainly when the thighs and buttock areas have excess fat, just like the above mentioned medicine Natrum Mur. But again the constitutional symptoms that are unique to using Lycopodium differentiate between these two. The patients who require Lycopodium are chronic sufferers of gastric troubles like flatulence and constipation^[18].

Barytacobonica

This remedy brings aid to scrofulous children, especially if they are backward mentally and physically, are dwarfish, do not grow and develop, have scrofulous ophthalmia, swollen abdomen, take cold easily, and then always have swollen tonsils^[19].

Nux Vomica

Homeopathic medicine Nux Vomica is recommended for persons who have gained excess weight due to sedentary habits. The first important symptom in persons requiring this medicine is that they are chronic sufferers of the most obstinate constipation. Such a person has a continuous urge to pass stool, but only a little stool is ejected at a time. The second symptom is intolerance to cold air. The third most important symptom is the eating habit – a person in need of Nux Vomica homeopathic medicine for losing weight likes spicy food, fatty food and stimulants like coffee or alcoholic drinks. Mentally, the person is extremely sensitive to external impressions and gets angry to an extreme degree too^[16, 20].

Capsicum Annuum

Persons with light hair, blue eyes, nervous but stout and plethoric habit. Phlegmatic diathesis; lack of reactive forces, especially with fat people, easily exhausted; indolent, opposed to physical exertion, get homesick easily. Burning and smarting sensation in GIT^[21].

Cinchona Officinalis

It is used specially for obesity treatment to reduce gluttonous appetite; indigestion after taking raw fruits and vegetables. Basically, it is used for those people who are internally very weak but obese. For stout, swarthy person; for system once robust, which have become debilitated "Broken down" from exhausting discharges. Indifferent, taciturn, gloomy^[20].

Conclusion

Obesity can be effectively treat with homoeopathic remedies. Successful programs for weight reduction and maintenance include homeopathic treatment along with an exercise schedule and a diet plan .Homeopathic medicines also correct the underlying problems such as overeating, stress, and endocrinal problems. For optioning good results, homeopathy distills the person's physical, mental, emotional and psychological aspects, including sensitivities and sensibilities to bring about a healthy, long-lasting change towards healthy weight.

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