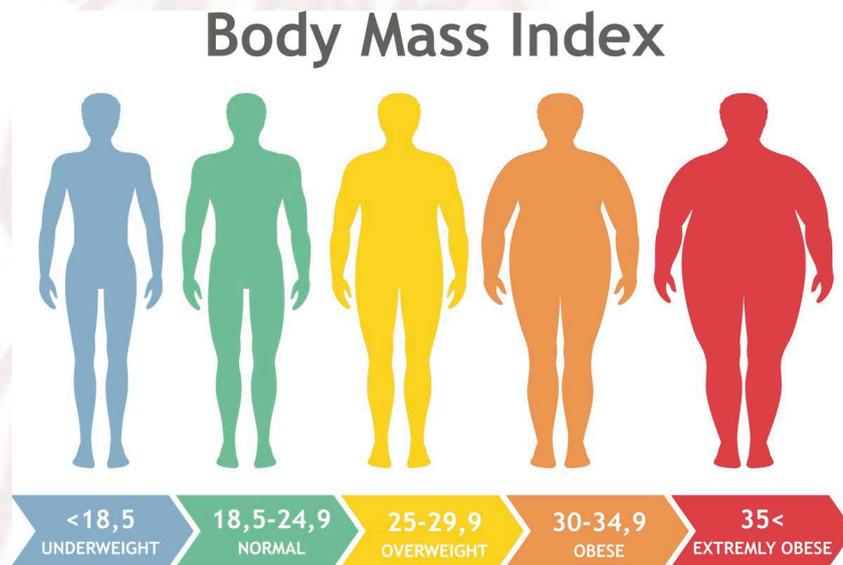


OBESITY

Obesity or overweight is defined as abnormal or excessive fat accumulation that can impair health of an individual.

Body mass index (BMI) is simple index for weight and for height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of the height in metres (kg/m^2). BMI greater than 30 is often diagnosed as obesity.



CAUSES

Obesity occurs when there is energy imbalance between calories consumed and calories expended i.e. when there is intake of more calories than the calories burned during exercise or daily routine activities.

Family inheritance & influences: Genes plays a vital role in efficiency of the body to convert food into energy, to regulate appetite and to burn the calories during exercise. Family members also tends to share similar food and activity habits.

Lifestyle choices: Unhealthy diet: High calorie diet, less intake of fruits and vegetables, junk or processed food, and oversized portion contribute to obesity.

Liquid calories: High calorie alcohol, sugared soft drinks etc.

Sedentary lifestyle: less physical activity and increased sedentary activities like work at computer, mobile, tablets screens for longer time.

Certain Disease and Medications: Diseases such as Prader-Will syndrome, Cushing syndrome and arthritis that lead to decreased physical activity can result in obesity. Medications such as anti-depressants, anti-seizure medications, diabetes medications, anti-psychotic medication, steroids and beta blockers

Age: obesity can occur at any age, even in young children but as the age advances hormonal changes and less active lifestyle increase the risk of obesity.

Pregnancy: Weight gain is common during pregnancy and some women find it difficult to lose weight after delivery which leads to obesity.

Quitting smoking: Often people use food to cope with smoking withdrawal that makes weight which eventually leads to obesity. However quitting smoking is still a greater benefit to the health.

Improper sleeping pattern: Not getting enough sleep or sleeping too much can cause changes in hormones that increase appetite.

Stress: People often seek high-calorie food when experiencing stressful situations.

SYMPTOMS

In Adults

Excess body fat accumulation, particularly around the waist

Shortness of breath

Profuse sweating, Snoring

Skin problems due to the moisture that accumulates in the skin folds

Fatigue (mild to extreme)

Pain (common in back and joints)

Psychological impact such as negative self-esteem, depression, social isolation, etc.

In Children and adolescents

Fatty tissue deposit (particularly in the breast area)

Appearance of stretch marks on the hips and back

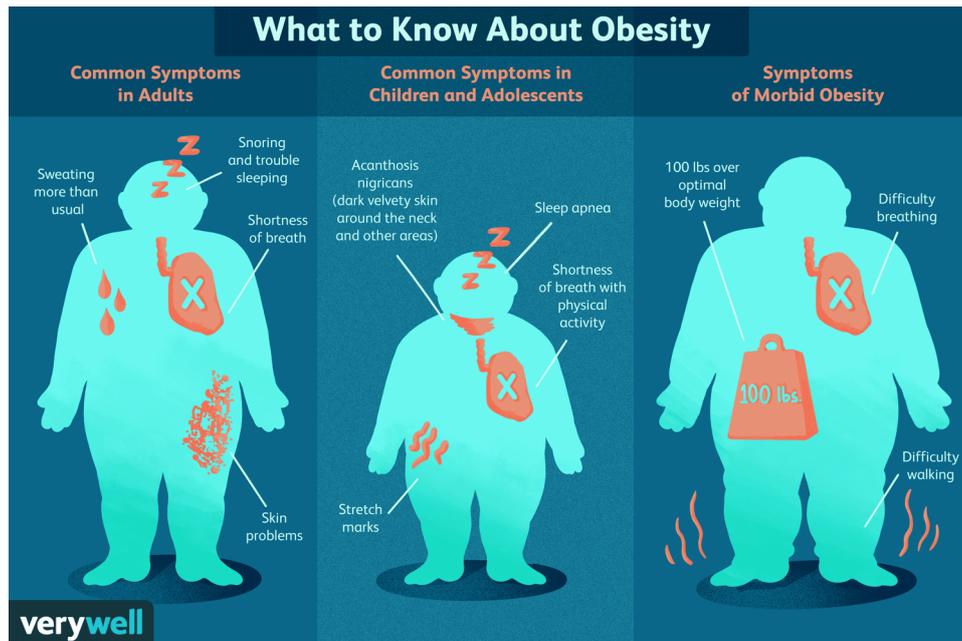
Acanthosis nigricans (dark velvety skin around the neck and other areas)

Shortness of breath with physical activity, Sleep apnoea

Constipation, GI reflux

Poor self-esteem, early puberty in girls/delayed puberty in boys

Orthopaedic problems, such as flat feet or dislocated hips.



RARE SYMPTOMS

Early onset obesity can develop in children due to several genetic disorders involving genes that play vital role in regulating appetite and energy expenditure which include:

Pro-opiomelanocortin (POMC) deficiency obesity: hyperphagia (extreme hunger) starting during infancy, early onset obesity and hormonal problems such as adrenal insufficiency.

Leptin receptor (LEPR) deficiency obesity: hyperphagia, severe early onset obesity and hypogonadotropic hypogonadism (a condition in which male testes or female ovaries produce little or no sex hormones due to problem with pituitary gland or hypothalamus).

Bardet-Biedl syndrome (BBS) – hyperphagia: early onset obesity, vision impairment, polydactyl and kidney impairment.

COMPLICATIONS

Heart disease and stroke

Type 2 diabetes mellitus

Certain cancers (carcinoma of uterus, cervix, endometrium, ovary breast, colon, rectum, oesophagus, liver, gall bladder, pancreas, kidney and prostate)

Digestive problems like heartburn, gall bladder disease and liver problems

Gynaecological & sexual problems such as irregular periods in women and erectile dysfunction in men

Sleep apnoea

Osteoarthritis

TREATMENT

Weight loss via restricted calorie dieting and physical exercise

Low carbohydrate diet rather than low fat diet

Medicines such as orlistat, lorcaserin, liraglutide, phentermine-topiramate and naltrexone-bupropion on long term use result in weight loss but has severe negative effects on heart and kidneys.

Bariatric surgery

OBESITY IN AYURVEDA

Obesity has been described as *Sthoulya* or *medhoroga* in Ayurveda. It is described under *Santarpanothavikara* (disease due to overnourishment) and is also one among the *Ashtauninditya* (eight undesirable qualities). According to Acharya Charaka (ancient scholar of Ayurveda) too obese and too lean are the most undesirable qualities because obese people will inherit eight defects which are short lifespan, constricted limited movement, impotence, debility, emit foul smell, profuse sweating and excessive hunger and thirst.

A person who due to extensive growth of fat is unable to work as well as disfigured with pendulous buttocks, belly and breast is called as *Atisthoola*. This condition is termed as *Atisthoulya*.

NIDANA (Causes)

Beejadoshha (Genetic Factor): Over nutrition particularly with *madhura rasa* (sweet taste) during pregnancy act as a causative factor for birth of obese child.

Dhatuvagnimandhya: Weak digestive fire at the level of body tissues (poor fat metabolism).

Factors which vitiates *medas* (adipose tissue) or *kaphadosha* like:

Aharaatmaja Nidana (Dietary cause)

Guru Aahara sevana (intake of hardly digestible food e.g. cheese, meat, fried food, etc.)

Madhuraahara sevana (excess intake of sweet food items like desserts, sugary beverages, jiggery, etc.)

Adhyasana (intake of food before digesting the previous meal)

Atisampoorana (binge eating)

Atibrhmana (Over nourishment)

Athisleshmala aahara sevana (intake of freshly harvested rice or wheat, all dairy products, etc.)

Vihaaraatmaja Nidana (lifestyle cause)

Avyayama (lack of physical exercise)
Avyavaya (abstinence from sexual indulgence)
Divaswapna (sleeping in daytime)
Sukhashayya (lying on a bed or couch for longer period)
Atiaasana (sitting for long time)

Manasa Nidana (psychological causes)

Harshanityatwa (uninterrupted cheerfulness)
Achintana (freedom from anxiety to any work)
Manasanivruthi (relaxed mind)

Anya Nidana (Miscellaneous Factors)

Factors that causes ***ama*** or ***ajeerna*** (indigestion)
Excessive intake of ***rasayana*** or aphrodisiac

SAMPRAPTHI (ETIOPATHOGENESIS)

DUE TO CAUSATIVE FACTOR



JATRAGANI MAANDHYA (IMPAIR DIGESTIVE FIRE)



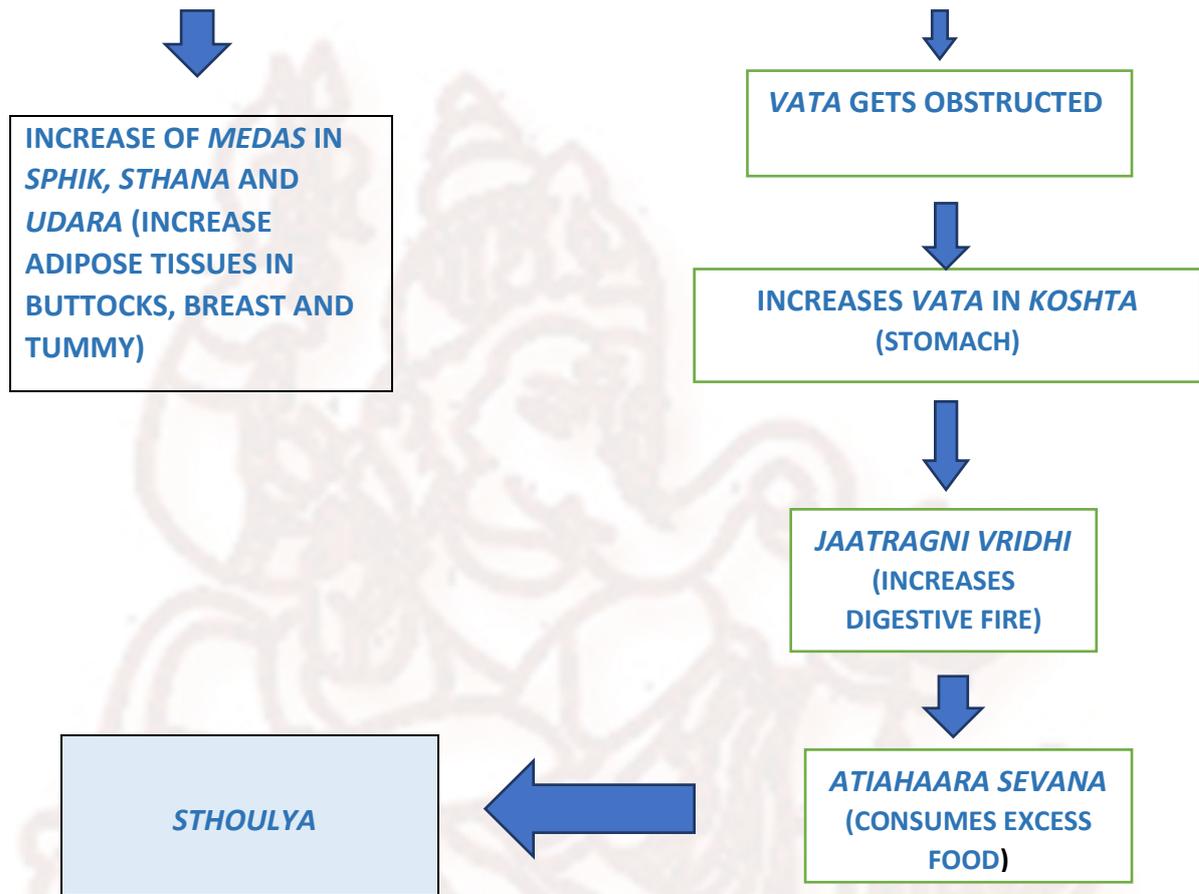
FORMATION OF **AMA** (BYPRODUCT OF UNDIGESTED FOOD)



DHATUVAGNI MAANDHYA (IMPAIRED FAT METABOLISM)



SANGA OF MEDOVAHASROTHAS (BLOCKAGE OF FAT CARRYING CHANNELS)



POORVA ROOPA (PREMONITORY SYMPTOMS)

- Alpe api cheshtide shwaasam* (feeling exhausted while performing mild exercise)
- Sphik Sthana udara lambanam* (more bulk on hip breast and tummy)
- Atippasa* (excessive thirst)
- Atikshudha* (excessive hunger)

ROOPA (SIGNS AND SYMPTOMS)

- Utsaaha haani* (less enthusiasm)
- Dourbalyatha* (debility)
- Nidraadikhyam* (excessive sleeping)
- Swedaabhaatam* (profuse sweating)
- Angagauravam* (feeling heaviness)
- Snigdaangatham* (feeling of unctuous)
- Gaatrasaadham* (body pain)
- AayasenaShwaasam* (feeling breathlessness while doing work)
- Atimootratha* (excessive micturition)

All the *Poorvaroopa*

UPASHAYA (PACIFYING FACTORS)

Following Pathya Ahaara and vihaara

ANUPASHAYA (NON PACIFYING FACTORS)

Intake of deep fried food, refrigerated or canned food

Intake of curd, pickles

Binge eating

Intake of sugary items

Excessive sleep during daytime

Lack of physical exercise

CHIKITSA (Treatment)

According to the Acharya Charaka treatment for *athisthoola* is difficult because if *karshanya* (emaciation therapy) done will further aggravate *vata* and *jathragni* (digestive fire). If *brhamana* therapy (nourishing therapy) is done it will further increase *medas* (adipose tissue).

Hence Ayurveda recommends multidimensional approach in the management of obesity. The treatment is planned according to the causative factors.

Metabolism: To raise the metabolism or the digestive fire herbs like *guggulu*, *shilajatu* are used which balances all three doshas.

Breaking down Ama: *Ama* can also be treated by toxin burning drugs like *guggulu*, *shilajathu*. Aggravated *vata* is treated by giving **enema (*Niruha vasti*)**

Diet: food which mitigate *vatakaphatha* and reduce fat should be given. Diet that emphasize on pungent bitter tastes which are composed of elements like fire, ether and air are advised as they promotes lightness in the body. Sweet taste is restricted as it is composed of heavier elements like earth and water that increases heaviness.

Exercise: Exercise should be performed according to the individual capacity or strength. Ayurveda never recommends overstraining. Exercise with gradual increase.

SHODHANA

Both Charaka and Vagbhata had clearly mentioned *sthoulya* as *bahudoshavastha* (all three dosha is increased) and hence *Shodana* is performed

There are two types of *Shodana*: ***Bahyashodhana*** and ***Abhyantharashodhana***

BahyaShodhana

Many Acharyas have mentioned external purificatory treatment for *sthoulya*. *Rooksha Udwarthanam* (body scrubbing with herbal powders) is mentioned in *dinacharya* (daily regimen) as it is *kaphahara*, *medasa pravilayanam* (equal distribution of body fat), *sthirakaranam aanganam* (stability to body parts).

Abhyantara Shodana

Charaka has mentioned *vamana*, *virechana* in *santorpanajanya vyadhis* (diseases caused due to over nourishment) and *sthoulya* is one among them.

Snehana: Intake of medicated ghee is contraindicated in *sthoulya*. But if needed *taila* like *tilataila* (sesame oil), *sarshapataila* (mustard oil), *triphaladitailam*, *panchatiktaguggulugrita* can be given.

Svedanam: It is very essential for the treatment of *sthoulya* as it helps to open the pores and eliminates the toxins from the body thereby reduces stiffness and heaviness in the body. *Nadisveda* (fomentation to the particular part of body with medicated drug), *parishekasveda* (pouring medicated liquid all over the body in synchronized manner), *dravasveda* (warm water bath), *Bashpasveda* (sauna bath, Fig.1) and *atapasevana* (sunbath) are few types of *swedana*.



Fig. 1: Two types of Bashpasvedanam

VAMANA (emesis): It is indicated in *Kaphaja* and *medaroga* and *sthoulya* is one among them. However it is recommended only in uncomplicated patients.

VIRECHANA (purgation): Acharya Sushruta had explained about *teekshana virechana* in the treatment for *sthoulya*. Formulation like *trivrutlehyam*, *triphaladichoornam*, *pippalyadichoornam* can be given.

VASTI (enema): *Vasti* is considered as fastest and effective *apatarpana* treatment (emaciating therapy). Acharya Charaka had mentioned *Rooksha* (dry), *ushna* (hot) and *teekshana* (penetrating) should be the properties of *vasti* in *sthoulya*. E.g. *Lekhana vasti*, *ksharavasti*, *vaitaranavasti*

Ingredients of *Vaitarnavasti* as follows:

1. *Saindavalavana* (rock salt)
2. *Puranaghrita/makshika* (old ghee or honey)
3. *Chincha leaves kalka* (leaves of tamarind paste)
4. *Tilataila* (sesame oil)
5. *Dhyanamlam/gomutra* (medicated water or cows urine).

Ingredients of *Lekhanavasti* are as follows:

1. *Makshikam* (honey)
2. *Saindhavam* (rock salt)
3. *Triphalatailam*
4. *Pootiyavaniyadi Kalka* (paste of drugs like *pooti, yavani*, etc.)
5. *Triphala Kashayam*
6. *Gomutram* (cows urine)
7. *Prakshepadravaya- Yavakshara*

Lekhanavasti helps to remove abnormally increased *Sneha* (unctuous) from the body.

NASYA (nasal drops instillation): Ayurveda texts have mentioned the benefits of *nasya* in *medoroga* as it helps to eliminate the excess *kapha* above the shoulder region. *Triphaladitailam* is recommended.

RAKTAMOKSHANAM (BLOOD LETTING): Acharya Charaka had explained about *raktamokshana* in *santarpanajanya vyadhi*. It can be done either by using leeches or venous puncture.

SHAMANA (Palliative treatment)

Langana (Fasting)

Amapachana

Heavy and non nourishing diet like honey, salad

Physical exercise

Herbal formulations

Kashayam (Decoctions):-*Varunadikashayam, Varaadikashayam,*

Varaasandikashayam, Guggulutikthakakashyam

Arishtam:-*Takraarishtam, Navayasaloha*

Tablets:-*Navakaguggulu, vyoshadiguggulu, Triphalaguggulu*

Chooranam:-*Triphaladichoornam, shadharanamchoornam*

Key drugs

Asana (Pterocarpus marsupium)

Guggulu (Commiphora mukul)

Shilajathu (Asphaltum punja)

Guduchi (Tinospora cordifolia)

Vidanga (Embelia ribes)

Musta (Cyperus rotundus)

Shunthi (Zingiber officinalis)

Amla (Embelica officinalis)

Vacha (Acorus calamus)

HOME REMEDIES

Drinking buttermilk with triphala powder

Squeeze lemon in a glass of warm water with a teaspoon of honey in it, drink early in the morning

Aloe vera juice

Sip water boiled with cinnamon stick throughout the day

Green tea

Spices like cayenne pepper, black pepper, cumin seed, fennel seeds, flax seeds, ginger should be included more in the diet.

YOGASANAS

Uttanapaadasana

Ekapadauttanaasana

Bhujangasana

Shalabhasana

Pavanamuktasana

Dhanurasana

Surya namaskaram

PRINCIPLE CHANGES TO BE MADE IN EATING HABITS

Always eat slowly and gradually by chewing and grinding the food thoroughly.

Dinner should be light and must be done at least 2 hours prior to bed.

Never drink water immediately after eating. It's best to drink water at least half an hour before meals.

It's ideal to consume the food only when the previous meal is digested.

Food capacity: the stomach should be filled half with the solid food and the other quarter with water and the rest of the quarter must be kept vacant for air

Always have warm food and warm water.

PATHYA APATHYA (wholesome and unwholesome diet)

PATHYA (DOS)	APATHYA (DONTS)
<p><i>Puranashali</i> (old variety of rice), Brown rice Oats, Ragi flour (millet flour)</p> <p><i>Yava</i> (barley), <i>kulatha</i> (horse gram), <i>mudga</i> (green gram)</p> <p><i>Chanaka</i> (chickpea)</p> <p>Luke warm water</p> <p>Butter milk, <i>Madhu</i> (honey)</p> <p><i>Puranasidhu</i> (old wine)</p> <p><i>Gomutra</i> (cows urine)</p> <p><i>Lasuna</i> (garlic), <i>ardraka</i> (wet ginger), <i>shunti</i> (dry ginger)</p> <p>Chia seeds</p> <p><i>Patola</i> (bottle gourd) <i>Karavellaka</i> (bitter guard) Cucumber Dry meat Regular exercise, Yoga, Pranayama Regular sleep at night</p>	<p><i>Navanna</i> (freshly harvested rice)</p> <p>black gram</p> <p>cold water</p> <p>Dairy products such as yoghurt, cheese etc.</p> <p>Excessive intake of deep fried oily food, salty and sour items</p> <p><i>Atimaatra aahara sevana</i> (Intake of excess quantity of food)</p> <p>Carbonated beverages</p> <p>Sugar</p> <p><i>Nootanamadya</i> (new wine)</p> <p>Sweet potato, potato</p> <p><i>Diva Swapna</i> (daytime sleeping)</p> <p><i>Ratrijaagarna</i> (awake at night)</p> <p><i>Alasya</i> (Sedentary lifestyle)</p>

CLINICAL EXPERIENCE

A 37 year old female patient came to our clinic for the weight loss program. She was an athlete and her weight was normal until she was 29 years old. Then she suffered from a severe sports injury and underwent hip replacement surgery. She was under steroids medications for 6 months and due to restricted mobility she gradually gained 25 kg in one year. Her BMI was 35 and all her vitals were unremarkable.

Her treatment plan of 2 times per day for 27 days was as follows:

Abhyantara rookshana and deepanapachana with shadangkashayam (to restore metabolism) for 3 days

Rooksha udwartana with kolakulathadichoornam+triphalaadichoornam for 14 days

Dhanyamladhara for 7 days

Bashpasveda for 10 minutes for 21 days

Manalkizhi for 7days

Pizhichil with chinchaditailam for 5 days

Matravasti with sahacharadimezhukupakam for 11 days

Repeated sadyovirechana was done with misrakasneham and gandharvahastadierandatailam.

Nasya with shadbindhutailam for 5 days

Diet chart

Breakfast at 8am: cooked fruits, smoothie along with honey lemon tea for first 7 days. Followed by any one of cooked fruits/ragidosa/oats porridge

Midmeal at 11 am: Cucumber juice/ herbal tea/ash gourd juice

Lunch at 2pm: Cooked vegetables and watermelon juice/muskmelon juice

Snacks at 4pm: Herbal tea and small portion of cooked green grams

Dinner at 7 pm: big bowl of soup okra/pumpkin/carrot/dal

Activities

Drink at least 3 litres of warm water per day

Practice yoga and pranayama 1 hour daily

Brisk walk for 3 hours every day. Patient was told to start with 1 hour of walking initially and then gradually increase the time.

Sunbath after 4 pm for 30 min

Avoid sleep during daytime

Regular sleep at 10 pm

Wake up at 6 am followed by intake of 1 glass of honey lemon water

After strictly following these instructions she was able to lose around 13 kg of body weight.

Advice on discharge

***Guggulutitakakashayam* before breakfast , *Navakaguggulu* twice daily after meals**

***Avipathi choornam* 1tsp with half glass of warm water before bedtime once in 15 days.**

These medications should be continued for 3 months. While taking this medication strict vegetarian diet should be followed.

After 3 months the patient can consume egg white once in a week. Strictly adhere to Pathya and Apathya.

CONCLUSION

Person must realize that a prolong dieting is necessary as restricted diet regimen along with regular exercise can ensure optimum weight loss. It is observed that best result is achieved in well motivated person with strong mental ability. Currently, many products are available which advertise for the weight loss. Even though some may have therapeutic benefits the quantity of medicines should be always lesser than the quantity of food intake. Some may have dangerous adverse effects. Hence if a person follows *pathya-apathya* they can lead a healthy life.

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