Food Intervention in Malnutrition, Apatarpanajanya vyadhi under nutrition, classification of under nutrition, deficiency diseases of Protein and, Santarpanajanya vyadhi over nutrition,

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#### Malnutrition

- Malnutrition involves a dietary deficiency. People may eat too much of the wrong type of food and have malnutrition, but this article will focus on undernutrition, when a person lacks nutrients because they do not consume enough food.
- Poor diet may lead to a lack of vitamins, minerals, and other essential substances. Too little protein can lead to kwashiorkor, symptoms of which include a distended abdomen. A lack of vitamin C can result in scurvy.
- According to the World Health Organization (WHO), 462
  million people worldwide are malnourished, and stunted
  development due to poor diet affects 159 million children globally

- Malnutrition during childhood can lead not only to long-term health problems but also to educational challenges and limited work opportunities in the future.
- Malnourished children often have smaller babies when they grow up.
- It can also slow recovery from wounds and illnesses, and it can complicate diseases such as measles, pneumonia, malaria, and diarrhoea. It can leave the body more susceptible to disease.

- Malnutrition can occur when an individual does not get required nutrients. Children, infants and old people are also always at an increased risk of malnutrition.
- Children suffer from malnutrition as they need more energy and nutrients during their growth and development period, whereas adults may suffer due to loss of appetite and decreased intestinal functioning.
- Malnutrition can have short and long-term effects on one's health.
- ► Hence, it is important to know about certain types of food that help in prevention of malnutrition.

# What problems does malnutrition cause?

- Unintentional weight loss
- ▶ Tiredness and fatigue
- Muscle weakness
- Depression
- Poor memory
- Weak immune system
- Anaemia
- Stunted growth
- Skin infections
- Hair loss
- Prolonged diarrhoea
- Renal failure

#### Foods to Prevent Malnutrition:

#### ▶ 1. Carbohydrates:

- ► Carbohydrates help your body to get the energy. They also help in protein storage in the body. The brain requires carbohydrates to get energy, but insufficient carbohydrate intake for a month can stop the metabolism of fatty acids. This results in protein loss from the body and weakens it, causing malnutrition.
- ▶ It is advised to take 50 to 100 grams of carbohydrates for preventing the development of the ketones. The food products that include carbohydrates are wheat, oats, sugars, white rice, pasta and honey.

▶ 2. Fruits and Vegetables:

▶ It is advisable to obtain the vitamin intake from fresh seasonal fruits and vegetables. Include them in your daily diet.

#### 3. Proteins:

- Protein is a vital nutrient present in each cell of the human body. Proteins also provide the body with special nitrogen which cannot be obtained from carbohydrates or lipids. Proteins are useful in regulating the ph, or acid-base balance in your blood. These are required for the synthesis of hormones and enzymes. These are also essential for cell formation and immune system. During starvation, large amounts of muscle tissues get wasted and this leads to poor health. Protein in an adequate amount is required to metabolize and process energy in the liver and the kidneys.
- ▶ It is recommended to consume 10–35% of your daily calories as protein. Foods that include protein are legumes, eggs, nuts, oatmeal, grains, wheat, peanut butter, canned meat, fish and popcorn.

#### 4. Fats:

- ▶ Fats play an essential role in maintaining healthy skin and hair when consumed in our daily diet. They also help in insulating our body organs against shock, maintain the body temperature and give healthy cell functioning. Fats are useful to store energy in the body. In addition, fats are also a good source of essential fatty acids that are useful to prevent many diseases, including malnutrition.
- ▶ It is recommended that 30-35% of the daily calorie must come from fat. The food products that include fats are peanut butter, oil, whole milk, , nuts and seeds.

#### 5. Vitamins and Minerals:

- Vitamins play a vital role in performing crucial functions in the body. Vitamins and minerals promote good health and give protection against infection and many diseases.
- They also help in growth of the body, metabolism and elimination of waste products.
- It is advised to take these from the dietary sources, but if found insufficient they can also be taken from supplements as an alternative. They very well help in malnutrition prevention.

#### 6. Balanced Diet:

- ▶ A balanced diet is one which provides all the nutrients in required amounts and proper proportions. It can easily be achieved through a blend of the four basic food groups. The quantities of foods needed to meet the nutrient requirements vary with age, gender, physiological status and physical activity. A balanced diet should provide around 50-60% of total calories from carbohydrates, preferably from complex carbohydrates, about 10-15% from proteins and 20-30% from both visible and invisible fat. In addition, a balanced diet should provide other non-nutrients such as dietary fibre, antioxidants and phytochemicals which bestow positive health benefits. Antioxidants such as vitamins C and E, beta-carotene, riboflavin and selenium protect the human body from free radical damage. Other phytochemicals such as polyphenols, flavones, etc., also afford protection against oxidant damage. Spices like turmeric, ginger, garlic, cumin and cloves are rich in antioxidants.
- Consuming a balanced diet with multi-vitamins is one way to prevent malnutrition. This can also help you in getting rid of dental problems, inflammation, oedema, weakness, tongue soreness, anaemia, fatigue, diarrhoea, dermatitis, tingling in the hands, poor growth, poor nerve function and bleeding gums.

## 7. Hydration:

- ▶ Boost your water intake with 9 glasses per day. Water is the best fluid, but other liquids count as well.
- ▶ You can take other fluids in the form of:
- Soup
- ▶ Juice
- Coconut water
- Milk

#### 8. Sea Food and Meat:

- ▶ include foods such as turkey, salmon, mussels, chicken, beef, eggs, crab, clams, milk which are rich sources of B-12.
- Sardines or mackerel, egg yolk, canned salmon, soy milk, cow's milk contains a good amount of vitamin d. Canned tuna, oysters, trout, crab, herring or sardines, salmon is a rich source of fatty acids.

## Apatarpanottha roga

- देहाग्निबलवणौँजःशुक्रमांसपरिक्षयः|
   ज्वरः कासानुबन्धश्च पार्श्वशूलमरोचकः||२७||
   शोत्रदौर्बल्यमुन्मादः प्रलापो हृदयव्यथा|
   विण्मूत्रसङ्ग्रहः शूलं जङ्घोरुत्रिकसंश्रयम्||२८||
   पर्वास्थिसन्धिभेदश्च ये चान्ये वातजा गदाः|
   ऊर्ध्ववातादयः सर्वे जायन्ते तेऽपतर्पणात्||२९||
   तेषां सन्तर्पणं तज्जैः पुनराख्यातमौषधम्|
   यत्तदात्वे समर्थं स्यादभ्यासे वा तदिष्यते ||३०|| c.su.23
- Emaciation of the body, reduction in the power of digestion, strength, complexion, ojas, semen, muscle tissues, continuous fever, cough, chest pain, anorexia, hearing sound impairement (weakness), insanity, cardiac pain, stool and urine excretion obstruction, pain in thighs, calf muscles, lumber regions, fingers, joints, bones and other vata vitiated disorders like urdha vata, all occurs due to under nutrition.

सद्यःक्षीणो हि सद्यो वै तर्पणेनोपचीयते। नर्ते सन्तर्पणाभ्यासाच्चिरक्षीणस्तु पुष्यति॥३१॥ देहाग्निदोषभेषज्यमात्राकालानुवर्तिना। कार्यमत्वरमाणेन भेषजं चिरदुर्बले॥३२॥

- Sadya santarpan should be given to person, Suffering from acute emaciation and person those are suffering from chronic emaciation should be given normal santarpan therapy.
- Slow santarpan therapy should be administered in case of chronic emaciation, considering prakriti (constitution), Agni (digestive fire), dosa, kala and matra (quantity)

### हिता मांसरसास्तस्मै पयांसि च घृतानि च| स्नानानि बस्तयोऽभयङ्गास्तर्पणास्तर्पणाश्च ये||३३||

Meat soup, milk, ghee, bathing, snehan basti and abhyanga should be given to such patients. ज्वरकासप्रसक्तानां कृशानां मूत्रकृच्छ्रिणाम्। तृष्यताम्ध्ववातानां वक्ष्यन्ते तर्पणा हिताः॥३४॥ शर्करापिप्पलीतैलघृतक्षौद्रैः समांशकैः। सक्तुद्विगुणितो वृष्यस्तेषां मन्थः प्रशस्यते॥३५॥ सक्तवो मदिरा क्षौद्रं शर्करा चेति तर्पणम्। पिबेन्मारुतविण्मूत्रकफपितानुलोमनम्॥३६॥

- ► Tarpan(nourishing drinks) are beneficial to persons suffering from fever, emaciation, dysuria and urdha vata.
- Mantha made up of sugar, pippali, ghee, oil and honey in equal proportion is beneficial, when taken along with double quantity of saktu.

## फाणितं सक्तवः सर्पिर्दधिमण्डोऽम्लकाञ्जिकम्| तर्पणं मूत्रकृच्छ्रध्नमुदावर्तहरं पिबेत्॥३७॥ मन्थः खर्जूरमृद्वीकावृक्षाम्लाम्लीकदाडिमैः। परूषकैः सामलकैर्युक्तो मद्यविकारनुत्॥३८॥

- स्वादुरम्लो जलकृतः सस्नेहो रूक्ष एव वा| सद्यः सन्तर्पणो मन्थः स्थैर्यवर्णबलप्रदः||३९||
- स्वादुरम्ल इत्यादिना सद्यस्तर्पणमाह| अम्ल इति अम्लदाडिमादियोगात्। अत्र रूक्षसक्तुकृतस्यापि मन्थस्य द्रवत्वशैत्यदेहानुसारित्वैः सद्यःसन्तर्पकत्वं भवत्येव, अत एव 'सद्य' इत्युक्तं, स्नेहादिबृंहणद्रव्ययोगातु कालान्तरतर्पकत्वमपि भवति।।३९॥
- Drinks prepared of saktu, madya, madhu, sarkara, facilitates proper elimination of mala, mutra, vata, pitta and kapha.
- Phanita prepared from sugar candy, ghee, dadhi manda,amla kanjika, are administered in disorders like udavarta,a type of vata disorder.
- Mantha prepared from kharjur, draksha, vrikshamla, chincha(imali), dadima, parusaka(phalsa), and amalki are administered in madatyaya.

- Mantha prepared from Madhur, amla rasa with water acts as sadya santarpan and increases bala, varna, energy. Amla things like dadima and parusaka are used in mantha.
- Mantha prepared from ruksha thinks like saktu are also nourishing due to liquid, cold and soothing nature.
- If singdha and brihmahan drugs are used, then they will be as kalantara santarpakas.

#### Undernutrition

- Undernutrition occurs when people do not eat (or absorb) enough nutrients to cover their needs for energy and growth, or to maintain a healthy immune system.
- Micronutrient deficiencies are a sub-category of undernutrition and occur when the body lacks one or more micronutrients (e.g. iron, iodine, zinc, vitamin A or folate).
- These deficiencies usually affect growth and immunity but some cause specific clinical conditions such as anaemia (iron deficiency), hypothyroidism (iodine deficiency) or xerophthalmia (vitamin A deficiency).

- Undernutrition is an important underlying cause of illness and death in Africa especially among women and young children – probably contributing to more than half the deaths among under-five year olds.
- In this article we examine the causes and effects of undernutrition at different ages, and give a brief overview of key actions.
- We hope that this will help you to plan preventive activities and obtain necessary resources.

#### Causes of undernutrition

- ▶ We can divide the causes of undernutrition into immediate, underlying and basic.
- ▶ Immediate causes are:
- Poor diets. Meals may be low in quantity, nutrient density or variety, or eaten infrequently. Infants may get insufficient breast milk.
- ▶ Disease, particularly HIV/AIDS, diarrhoea, respiratory tract or ear infections, measles, hookworms and other gut parasites.

- Underlying causes are:
- Family food insecurity
- Inadequate care of vulnerable household members (e.g. 'unfair' sharing of food within families)
- Unhygienic living conditions (e.g. poor water supplies and poor sanitation)
- Inadequate health services
- Basic causes are:
- Poverty
- Lack of information, political and economic insecurity
- War
- Lack of resources at all levels, unequal status of women, and/or natural disasters

#### Food intervention in Undernutrition

- Nutrition interventions that are well integrated into the healthcare system and are a routine part of care have proven particularly effective in promoting maternal and child health.
- Such interventions include the promotion of exclusive breastfeeding for 6 months and continued breastfeeding up to two years of age and beyond, micronutrient supplements for women and children, home-fortificants, optimal complementary feeding, and the promotion of hand washing with soap.

- Complementary food interventions that are age, energy and nutrient appropriate can be particularly effective when foods are prepared in a hygienic environment and are suited to the local context. In low-income settings, preventive programmes around food production, storage and preparation, education, and healthcare are particularly successful.
- ➤ To address these issues, partners, for example through the Scaling Up Nutrition Movement (SUN), have agreed on the need for Nutrition-sensitive development strategies with nutritional outcomes specified as key goals, including mainstreaming initiatives into education, social protection, water and sanitation and hygiene, as well as agricultural investments and campaigns that promote a varied supply of food at affordable prices and recognise the social significance of the food and agricultural sector for supporting rural livelihoods.
- The SUN framework focuses on the 1000 day window of opportunity between pregnancy and the child's second birthday and recognises that investing in well-tested, low-cost nutrition interventions is one of the most effective ways to save lives and enhance the intellectual, physical and social growth of children.

#### Classification of Under nutrition

- ▶ 1. Gomez classification
- 2. waterlow classification
- ▶ 3. welcome classification

#### Gomez classification

- ► The child's weight is compared to that of a normal child (50th percentile) of the same age. It is useful for population screening and public health evaluations.
- Percent of reference weight for age = [(patient weight) / (weight of normal child of same age)] \* 100
- ▶ Gomez classification One of the earliest systems for classifying protein-energy malnutrition in children, based on percentage of expected weight for age: over 90% is normal, 76–90% is mild (first degree) malnutrition, 61–75% is moderate (second degree) malnutrition and less than 60% is severe (third degree) malnutrition.

#### Waterlow Classification:

- ► Chronic malnutrition results in stunting. Malnutrition also affects the child's body proportions eventually resulting in body wastage.
- Percent weight for height = [(weight of patient) / (weight of a normal child of the same height)] \* 100
- Percent height for age = [(height of patient) / (height of a normal child of the same age)] \* 100

	Mild Malnutrition	Moderate Malnutrition	Severe Malnutrition
Percent Ideal Body Weight	80-90%	70-79%	< 70%
Percent of Usual Body Weight	90-95%	80-89%	< 80%
Albumin (g/dL)	2.8-3.4	2.1-2.7	< 2.1
Transferrin (mg/dL)	150 – 200	100 – 149	< 100
Total Lymphocyte Count (per µL)	1200 – 2000	800 – 1199	< 800

## Wellcome Classification: evaluates the child for edema and with the Gomez classification system.

Weight for Age (Gomez)	With Edema	Without Edema
60-80%	kwashiorkor	undernutrition
< 60%	marasmic-kwashiorkor	marasmus

### Protein-energy malnutrition

- Protein-energy undernutrition (PEU), previously called protein-energy malnutrition, is an energy deficit due to deficiency of all macronutrients. It commonly includes deficiencies of many micronutrients. PEU can be sudden and total (starvation) or gradual.
- PEM is fairly common worldwide in both children and adults and accounts for 6 million deaths annually. In the industrialized world, PEM is predominantly seen in hospitals, is associated with disease, or is often found in the elderly.
- Note that PEM may be secondary to other conditions such as chronic renal disease or cancer cachexia in which protein energy wasting may occur.
- Protein-energy malnutrition affects children the most because they have less protein intake. The few rare cases found in the developed world are almost entirely found in small children as a result of fad diets, or ignorance of the nutritional needs of children, particularly in cases of milk allergy.

## Types include:

- Kwashiorkor(protein malnutrition predominant)
- Marasmus(deficiency in calorie intake)
- Marasmic kwashiorkor (marked protein deficiency and marked calorie insufficiency signs present, sometimes referred to as the most severe form of malnutrition).

#### kwashiorkor

- ▶ Kwashiorkor is caused by a lack of protein in the diet. Every cell in our body contains protein. We need protein in our diet for our body to repair cells and make new cells. A healthy human body regenerates cells in this way constantly. Protein is also especially important for growth during childhood and pregnancy. If the body lacks protein, growth and normal body functions will begin to shut down, and kwashiorkor may develop.
- Kwashiorkor is most common in countries where there is a limited supply or lack of food. It is mostly found in children and infants in sub-Saharan Africa, Southeast Asia, and Central AmericaTrusted.

## The symptoms of kwashiorkor include:

- change in skin and hair color (to a rust color) and texture
- fatigue
- diarrhea
- loss of muscle mass
- failure to grow or gain weight
- edema (swelling) of the ankles, feet, and belly
- damaged immune system, which can lead to more frequent and severe infections
- irritability
- flaky rash
- shock

## Diagnosis

- ► These tests may look for muscle breakdown and assess kidney function, overall health, enlarged liver and growth. These tests include:
- arterial blood gas
- blood urea nitrogen (BUN)
- blood levels of creatinine
- blood levels of potassium
- urinalysis
- complete blood count (CBC)

#### Treatment

- Kwashiorkor can be corrected by eating more protein and more calories overall, especially if treatment is started early.
- We may first be given more calories in the form of carbohydrates, sugars, and fats. Once these calories provide energy, we will be given foods with proteins. Foods must be introduced and calories should be increased slowly because we have been without proper nutrition for a long period. Your body may need to adjust to the increased intake.
- Protein can be found in foods like:
- seafood
- eggs
- lean meat
- beans
- peas
- nuts
- seeds

# What are the complications of kwashiorkor?

- ► Even with treatment, children who have had kwashiorkor may never reach their full growth and height potential. If treatment comes too late, a child may have permanent physical and mental disabilities.
- ▶ If left untreated, the condition can lead to coma, shock, or death.

#### Marasmus

- Marasmus is a form of severe malnutrition. It can occur in anyone who has severe malnutrition, but it usually occurs in children. It typically occurs in developing countries. Marasmus can be lifethreatening, but we can get treatment for it.
- Seriously malnourished children may look older and have little to no energy or enthusiasm for anything. Marasmus can also make children short-tempered and irritable, but this is usually a more common symptom of kwashiorkor.

# Symptoms of marasmus

- The main symptom of marasmus is being underweight. Children with this condition have lost a lot of muscle mass and subcutaneous fat. Subcutaneous fat is the layer of fat just under the skin. Dry skin and brittle hair are also symptoms of marasmus.
- ▶ In children with marasmus, the following can also occur:
- chronic diarrhea
- respiratory infections
- intellectual disability
- stunted growth

### Causes of marasmus

- Nutrient deficiency is the main cause of marasmus. It occurs in children that don't ingest enough protein, calories, carbohydrates, and other important nutrients. This is usually due to poverty and a scarcity of food.
- There are several types of malnutrition. A malnourished child may have something other than marasmus. Among the more common types of malnutrition are serious deficiencies in:
- iron
- iodine
- zinc
- vitamin A

### Risk factors for marasmus

- Growing up in a developing country is a risk factor for marasmus. Areas that have famines or high rates of poverty have higher percentages of children with marasmus. Nursing mothers may be unable to produce enough breast milk due to malnutrition. This affects their babies.
- Viral, bacterial, and parasitic infections can cause children to take in too few nutrients. Regions with high disease rates and insufficient medical care may also have other factors that reduce the chances of people having enough food to eat.

# Diagnosis

- Physical examination like Measurements, such as height and weight, can help determine whether a child has marasmus. When those measurements are well below the measurements that a healthy child of a particular age should have, marasmus may be the cause.
- ▶ A lack of motion in a malnourished child may also help confirm a diagnosis of marasmus. Children with the condition tend to lack the energy or will to do anything.
- Marasmus is difficult to diagnose using blood tests. This is because many children with marasmus also have infections that can affect blood test results.

#### Treatment

- Initial treatment of marasmus often includes dried skim milk powder mixed with boiled water. Later, the mixture can also include a vegetable oil such as sesame, casein, and sugar. Casein is milk protein. The oil increases the energy content and density of the mixture.
- Once a child starts to recover, they should have a more balanced diet that meets their nutritional needs.
- ▶ If dehydration is a problem because of diarrhea, rehydration should also be a priority. A child may not necessarily need fluids delivered intravenously. Oral hydration may be sufficient.
- Infections are common among children with marasmus, so treatment with antibiotics or other medications is standard. Treating infections and any other health issues can help give them the best chance of recovery.

## Marasmic Kwashiorkor

In this condition, features of marasmus and kwashiorkor are present simultaneously. The body weight is less than 60% of the normal.

Dependent edema is present. Mental changes, skin and hair changes and hepatomegaly are evident. Secondary infection is very common in protein energy malnutrition. This is due to the fact that both humoral and cellular immunity are defective. The intestinal flora is altered and this may account for the diarrhea. Episodes of infection further jeopardize the nutritional status.



## Prognosis:

Depends on the severity of the disease at diagnosis and promptness of treatment. Marked weight loss, severe infections, fluid and electrolyte imbalance, hypoglycaemia, hypothermia, cardiac failure, elevation of serum bilirubin and liver enzymes, drowsiness and xerophthalmia indicate poor prognosis

## Laboratory Investigations:

- ► The total protein content of the body is reduced, and this is reflected most prominently as hypoalbuminemia.
- ▶ The plasma levels of essential aminoacids are low, but the nonessential aminoacids remain normal or even elevated.
- ▶ Basal metabolic rate is reduced. Hypoglycemia occurs commonly.
- ▶ Total body water is increased and all the compartments show increase of fluid. The plasma osmolality is reduced. Renal plasma flow is diminished and this results in impairment of renal function. Plasma sodium is increased with reduction in potassium and magnesium. Gross reduction of serum sodium is associated with a poor prognosis.

#### Treatment

- Treatment is aimed to supply a diet rich in calories, proteins and other essential nutrients. For success of treatment supplementation should be with natural foods available locally.
- 150 Kcal/Kg of energy and 3.3g/Kg of proteins are optimally required for catch-up growth.
- ► Fats are administered to supply adequate calories without increasing the bulk.
- ► Children with lactose intolerance do not tolerate carbohydrates, but they tolerate fats. As the child gains appetite, the frequency of feeding is increased. If there is severe anorexia, forced feeding has to be resorted to. Salt should be restricted to avoid congestive cardiac failure.

# Santarpanottha rogal

- सन्तर्पयति यः स्निग्धैर्मधुरैर्गुरुपिच्छितैः। नवान्नैर्नवमद्यैश्च मांसैश्चानूपवारिजैः॥॥ गोरसैगौँडिकैश्चान्नैः पैष्टिकैश्चातिमात्रशः। चेष्टाद्वेषी दिवास्वप्नशय्यासनसुखे रतः॥४॥
- One who consumes excess of , snigdh,madhur,guru, picchil substances, newly harvested rice, fresh wine, anup and varij mansa, milk products, food preparations made up of sarkara, who avoids physical exercises, enjoys divaswapna, asya sukha, get affected by santarpan.

- रोगास्तस्योपजायन्ते सन्तर्पणिनिमित्तजाः|
  प्रमेहपिडकाकोठकण्डूपाण्ड्वामयज्वराः||५||
  कुष्ठान्यामप्रदोषाश्च मूत्रकृच्छ्रमरोचकः|
  तन्द्रा क्लैब्यमितस्थौल्यमालस्यं गुरुगात्रता||६||
  इन्द्रियस्रोतसां लेपो बुद्धेर्मोहः प्रमीलकः|
  शोफाश्चैवंविधाश्चान्ये शीघ्रमप्रतिकुर्वतः||७||
- Disorders like prameha, pidka, koth, kandu, pandu, amay jwar, kushtha, vishuchika, mutrakriccha, anorexia, tandra, sterility, obesity, laziness, heaviness, indriya and shrotas lepa (obstruction), pramilak. Saupha (edema) are produced very fast by santarpan.

## Treatment

- शस्तमुल्लेखनं तत्र विरेको रक्तमोक्षणम्।
   व्यायामश्चोपवासश्च धूमाश्च स्वेदनानि च॥८॥
- Scraping, purgation, blood letting, exercise, fasting, smoking and sudation are some of the measures.

 सक्षौद्रश्चाभयाप्राशः प्रायो रूक्षान्नसेवनम्। चूर्णप्रदेहा ये चोक्ताः कण्डुकोठविनाशनाः॥९॥ त्रिंफलारग्वधं पाठां सप्तपर्णं सवत्सकम्। मुस्तं समदनं निम्बं जलेनोत्क्वथितं पिबेत्॥१०॥ तेन मेहादयो यान्ति नाशमभ्यस्यतो ध्रवम्। मात्राकालप्रयुक्तेन सन्तर्पणसम्त्थिताः||११|| म्स्तमारग्वधः पाठा त्रिफला देवदारु च श्वदंष्ट्रा खदिरो निम्बो हरिद्रे त्वक्च वत्सकात्॥१२॥ रसमेषां यथादोषं प्रातः प्रातः पिबन्नरः। सन्तर्पणकृतैः सर्वैर्व्याधिभिः सम्प्रमुच्यते॥१३॥ एभिश्चोदवर्तनोदधर्षस्नानयोगोपयोजितैः। त्वग्दोषाः प्रशमं यान्ति तथा स्नेहोपसंहितैः॥१४॥

- Intake of Haritaki with honey, ruksha anna, churna pradeha destroys kandu and kotha.
- ► Triphala kwath, aragvadha, patha, saptparna, vatsaka, musta, madan and nimba when consumed considering kala, matra and sthithi cures disorders due to overnutrition including prameha.
- ▶ Juices of Musta, aragvadha, patha, triphala, devdar, swadanstra, khadir, nimba, haridra, daru haridra, and vatsak chaal cures overnutrition disorders.
- Above mentioned drugs mixed with oil and ghee and used for abhyanga, cures tvak vikar.

- कुष्ठं गोमेदको हिङ्गु क्रीञ्चास्थि त्र्यूषणं वचा। वृषकेले श्वदंष्ट्रा च खराह्वा चाश्मभदेकः॥१५॥ तॅक्रेण द्धिमण्डेन बदराम्लरसेन वा मूत्रकृच्छ्रं प्रमेहं च पीतमेतद्व्यपोहति॥१६॥ तक्राभयाप्रयोगैश्च त्रिफलायास्तथैव च अरिष्टानां प्रयोगैश्च यान्ति मेहादयः शमम्॥१७॥ त्रयूषणं त्रिफला क्षौद्रं क्रिमिघ्नमजमोदकः। मन्थोऽयं सक्तवस्तैलं हितो लोहोदकाप्लूतः॥१८॥ व्योषं विडङ्गं शिग्रणि त्रिफलां कट्रोहिँणीम्। बृहत्यौ द्वे हरिद्रे द्वें पाठामतिविषा स्थिराम्॥१९॥ हिंड्ग् केब्कम्लानि यवानीधान्यचित्रकान्। सौवर्चेलमँजाजीं च हप्षां चेति चूर्णयेत्॥२०॥ चूर्णतैलघृतक्षौद्रभागाः स्युमीनतः समाः। सक्तूनां षोडशगुणो भागः सन्तर्पणं पिबेत्॥२१॥
- व्यायामनित्यो जीर्णाशी यवगोधूमभोजनः।
   सन्तर्पणकृतैर्दोषैः स्थौल्यं मुक्त्वा विमुच्यते॥२५॥

- Patha, gomedaka, hingu, krauncha asthi, pippali, maricha, vacha, vasa, gokhru, kharahva(trichispermum roxburghianum), asmabheda along with takra, and mastu and juice of badara cures obstinate urinary disorders and dysuria.
- Use of triphala and takra, arishta, alleviates urinary disorders.
- Mantha prepared from trikatu, triphala, with honey, vidanga, ajmoda, roasted corn flour, oil & decoction of agaru, is also useful.
- ► Trikatu, vidanga, sigru, triphala, kutaki, haridra, daruharidra. Patha, ativisa, sthira, hingu, yavani, dhanyaka, chitrak, sauvarchal, jiraka, hapusa, powders mixed with 16 parts roasted corn flour and water is useful in diabetes mellitus, vata roga, piles, jaundice, splenomegaly and anaemia.
- Exercising daily, consuming food like barley & wheat after feeling hunger cures the disorders due to over nutrition and obesity.

#### Overnutrition

- Alongside undernutrition, a 'double burden' of malnutrition is emerging with rates of obesity and related chronic diseases associated with urbanisation, aging populations, technological development and globalisation of food supplies and industry.
- ▶ Billions of dollars are spent annually by the food industry to promote the consumption of highly refined, high-calorie foods with little or no nutritional value. A 'nutrition transition' is thus taking place, where disease patterns are shifting away from infectious illnesses towards a higher rate of noncommunicable diseases, such as heart disease, diabetes and some types of cancer.

- For pregnant women, overweight and obesity increase the risk of Gestational Diabetes (GDM) (a form of diabetes with onset during pregnancy), pre-eclampsia, pregnancy-induced hypertension, and large babies, which in turn raises the chance for induced labour, caesarean sections, stillbirths and preterm births as well as development of type II diabetes for the mother.
- Renewed attention to maternal nutrition is urgently needed, not only to turn the intergenerational cycle of growth failure into a virtuous one, but also for the woman's own health and development.

## Food intervention in Overnutrition

- ▶ There is increasing evidence that taxation on high-calorie, low-nutrition foods can play a significant role in reducing the consumption of such products. Population-wide weight-control campaigns that raise awareness among medical staff, policy-makers and the public at large can also help to reduce obesity.
- ▶ Particularly important is the promotion of health literacy, capacity building, and empowerment to increase awareness around risk factors of obesity. Additional measures include restrictions on the marketing of unhealthy foods and sugary drinks to children, and controls on the use of misleading health and nutrition claims; mandatory front-of-pack food labelling helps consumers to identify healthier options. Likewise, built environment and urban planning policies can help to ensure a health-enhancing setting, including the provision of green spaces and opportunities for physical activity.
- A holistic approach to nutrition encompasses all aspects of one's lifestyle and nutritional requirements and, if started early on, adopting measures that promote physiological as well as mental and social wellbeing all help to reduce diet-related illness and disease later in life.