



## ***IITG HOSPITAL NEWSLETTER***



IIT Guwahati Hospital

**Indian Institute of Technology Guwahati**

Guwahati Assam

Pin Code: 781039

*24x 7 emergency medical services available*

### **AIMS AND OBJECTIVES**

The Medical Section appreciates the positive response it got for its effort in publishing the Hospital Newsletter Volume II during last year. So in order to maintain the high standards of delivering quality health education for its patients the IITG Hospital has yet again come up with the 3rd Volume of the Hospital Newsletter. The newsletter contains articles on health related issues for meeting the noble objective of creation of more health awareness among the IITG community. This newsletter also contains images of health events organised by IITG hospital during the year 2017. Here's wishing all our esteemed readers and their family a good health for this new calendar year 2018.

With regards

Team, Medical Section  
IIT Guwahati

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## DIET AND NUTRITION

Dr. Anuj Kr. Baruah.

We all know that overweight and obesity is becoming a worldwide problem nowadays. Obesity markedly increases the risk of heart disease, type 2 diabetes, hypertension, PCOS, fatty liver disease, arthritis, sleep apnoea and what not! Apart from this we all also want to maintain a nice figure. The main purpose of this write-up is to discuss about ideal body weight and how diet plays a role here along with physical activities.

To know your ideal body weight, just minus 100 from your height in centimetre. For example, if your height is 170 cm, then your ideal body weight is 70 Kg. For individuals with diabetes it is better to maintain weight at 90% of the ideal body weight.

For weight to remain stable, energy intake must match our energy output. The major components of energy output are Basal Metabolism and physical activity. The final figure, the estimated total energy requirement (TER), provides an approximation of total caloric needs in a state of energy balance for a person of a certain age, sex, weight, height, and physical activity level. Here the calorie is the unit for energy.

Now, the important step is to know how to calculate our **Basal Metabolic Rate (BMR)**. We use up energy even when we are resting. This is known as basal metabolism. Basal Metabolic Rate is the minimum calorific requirement required to sustain life in a resting individual. Roughly BMR is **24 Kcal per Kg** body weight per day for men and **22 Kcal per Kg** body weight per day for women.

Now we have to assess our activity factor. **Activity factor** is based upon the activity level and is categorized as Sedentary, Moderate and Strenuous. A **sedentary activity** level describes someone who gets little to no exercise, spends a lot of time sitting at a desk or watching television, without working out regularly. **Moderate activity** refers to everyday activities which require some physical strain such as doing housework, brisk walking, active interaction and playing with children, gardening, etc. So the activity factor will be, for sedentary level- 25 to 30% of BMR, moderate level- 35 to 50% of BMR and strenuous- 50 to 100% of BMR.

So, for a **70 Kg male** with **moderate activity factor**, total calorie requirement will be (BMR+ Activity factor): His BMR is  $24 \text{ Kcal} \times 70 = 1680 \text{ Calories}$ . At moderate level his activity factor will

be 35% of BMR, that is 588 Calories. Here total energy requirement is  $1680+588=2268$ , roughly **2200 calories**.

## Balancing Carbohydrate, Protein, and Fat

Three nutrients — carbohydrate, protein, and fat — contain calories that our body uses for energy. Here's how to balance these nutrients in a healthy diet.

### Carbohydrates

Carbohydrate provides 4 calories per gram. About 50 to 60 percent of our total daily calories should come from carbohydrate.

Besides giving our body energy that it uses right away, our body stores carbohydrate in the liver. Liver stores extra carbohydrate as glycogen and releases it later, when our body needs it. However, there's a limit to the amount of glycogen our liver can store. Once liver has reached that limit, our body turns the extra carbohydrate into fat.

There are two types of carbohydrates: Glucose is given a reference of 100 and other foods are rated accordingly.

- a) **Low-glycaemic index carbohydrates** (< 50): these are slow and good carbohydrates. They are high in fiber and other essential nutrients. Whole grains such as oats, lentils, beans, nuts, seeds, raw and cooked vegetables and most fruits are low-glycaemic index foods.
- b) **High-glycaemic index carbohydrates** (> 50): these carbohydrates are easily digested and absorbed, so they raise blood glucose levels rapidly. High-glycaemic index foods are needed to keep energy levels high during sports, physical activity or recovery from illness. These foods are best eaten along with protein and fatty foods. Examples of high-glycaemic index foods are- sugars, polished rice, refined wheat flour, noodles, naan, cornflakes, fruit-juices, potatoes, etc.

### Proteins

Protein also has 4 calories per gram. In a healthy diet, about 15 to 20 percent of our total daily calories should come from protein.

Our body needs protein for growth, maintenance, and energy. Protein can also be stored and is used mostly by our muscles. Our body changes about 60 percent of protein into glucose.

Protein takes 3 to 4 hours to affect blood sugar levels. When it does have an effect, foods that are mostly protein won't cause much of a rise in blood sugar.

### Fats

Fat has 9 calories per gram. In a healthy diet, about 20 to 25 percent of total daily calories should come from fat. Fat gives the body energy, too, but the body changes only about 10 percent of fat into glucose.



By itself, fat doesn't have much impact on blood sugar. But when we eat fat along with a carbohydrate, it can slow the rise in blood sugar. There are various types of fat, and some types are better for us than others. Choose mono-unsaturated or poly-unsaturated fat. These types of fats are liquid at room temperature. Mono-unsaturated fats are especially healthy because they lower the bad cholesterol (LDL) in our blood. These fats include olive, canola, avocado, and nut oils.

Limit saturated and trans-fats. Saturated fats are found in foods that come from animals, such as meat and dairy products. These kinds of fats are solid at room temperature. Hardened fats, such as coconut or palm kernel oils as well as oils that have been hydrogenated, also contain saturated fat. These can damage our blood vessels.

Trans-fats are found in most processed foods and many fried fast foods, such as French fries. They help food stay fresher longer, but they're just as bad as saturated fat.

Now, how we can distribute this calorie requirements. We should know that each gram of carbohydrate, protein and fat provides us with 4, 4 and 9 calories respectively. First and foremost, the daily requirement of **protein** should be met. This amounts to 15-20% of daily energy intake. Next is **fat**, which should be limited to 20-25% of the daily calorie requirement. **Carbohydrates** rich in natural fibre should constitute the remaining energy from foods.

To work out the above mentioned 2200 calories per day for a 70 Kg, moderately active male is as follows:

**Carbohydrate:** at 60% of total calories =  $60 \times 2200/100 = 1320$  calories. So daily amount of Carbohydrate will be  $1320/4 = 330$  gm.

**Protein:** at 15% of total calories =  $15 \times 2200/100 = 330$  calories. So daily amount of Protein will be  $330/4 = 82.5$  gm.

**Fat:** at 25% of total calories =  $25 \times 2200/100 = 550$  calories. So daily amount of fat will be  $550/9 = 61$  gm.

**Losing weight:** Individual calorie requirements differ from person to person. Usually 20 – 30 Kcal per Kg of Ideal Body Weight is adequate to maintain our Ideal Body Weight. If we want to lose weight, it should be gradual. A deficit of 500 Kcal per day will help us to lose half a kilogram of fat in a week. For safe and long-term weight loss, it is recommended to lose  $\frac{1}{2}$  to 1 Kg of weight a week, which averages to about 2 -4 Kg a month.

## What is a Balanced Diet?

A balanced diet contains a variety of foods in such quantities and proportions that the need for energy, proteins, fats, carbohydrates, vitamins, minerals and other nutrients is adequately met for maintaining health, vitality and general well-being and also makes a small provision for extra

nutrients to withstand short duration of leanness. To enjoy different foods within required calorific limits we should have some ideas regarding their nutrient and energy values. We can take help of food exchange list, which provides us with choices to make from different food groups with identical nutrient and energy values.

### Food Groups & Exchanges:

The word Exchange refers to the fact that each item on a particular food list in the Portion/Amount listed may be interchanged with any other food item on the same list. Each list is a group of measured or weighed foods of approximately the same nutritional value like calories, carbohydrates, protein, and fat.

### Food groups by nutritive value:

1) Cereals and millets, 2) Pulses (legumes), 3) Vegetables, 4) Fruits, 5) Animal foods, 6) Nuts and oilseeds & 7) Milk and milk products.

### Cereal Exchange

Quantity: 30 gm of any cereal mentioned in the table below:

Calories: 100 Kcal. / 21 gm of Carbohydrate/ 1- 3 gm of Protein/ Uncooked cereals have negligible fat.

|                                                                |
|----------------------------------------------------------------|
| 30 gm. (raw weight) of each of the food items provide 100 Kcal |
| Rice/Rice flakes/Rice flour/Sago                               |
| Noodles                                                        |
| Wheat/Wheat flour                                              |
| Broken wheat (Dalia)/Wheat, rawa, ragi flour/Jowar/Sooji       |
| Bajra (Pearl millet)/Corn                                      |
| Oats/Wheat flakes/Corn flakes                                  |

### Pulse Exchange

Quantity: 30 gms (uncooked) of any pulse/dal/legume

Calories: 100 Kcal. /17 gm of Carbohydrate/ 7 gm of Protein/ Negligible fat when uncooked.

|                                                                           |
|---------------------------------------------------------------------------|
| 30 gm. (raw weight) of each of the food items provide 100 Kcal            |
| Bengal gram dal/Red gram/Black gram dal/Green gram dal/Bengal gram flour. |

## Rajmah/Cholae or Chick pea/Cow pea

**Non-Vegetarian Exchange**

| Food Item    | Quantity (gm) | Kcal | Protein (gm) | Carb (gm) | Fat (gm) |
|--------------|---------------|------|--------------|-----------|----------|
| Mutton       | 50            | 100  | 8            | ---       | 7        |
| Fish/Chicken | 100           | 100  | 20           | ---       | 2        |
| Egg          | 1             | 85   | 6.5          | ---       | 6.5      |

**Vegetable Exchange**

| Food Item                             | Quantity (gm) | Kcal | Protein (gm) | Carb (gm) | Fat (gm) |
|---------------------------------------|---------------|------|--------------|-----------|----------|
| Leafy vegetables                      | 100           | 25   | 1            | 6         | ---      |
| All vegetables grown above the ground | 100           | 50   | 1            | 10        | ---      |
| Root vegetables*                      | 100           | 100  | 1            | 24        | ---      |

\*In raw carrot/turnip/onion/radish fiber content is high.

**Fruit Exchange**

Carbohydrate – 10 gm. /Calories – 50 Kcal.

| Fruits        | Quantity (edible portion)                      | Fruits   | Quantity (edible portion)                     |
|---------------|------------------------------------------------|----------|-----------------------------------------------|
| Apple         | 1 small/ <sup>1</sup> / <sub>2</sub> medium    | Banana   | <sup>1</sup> / <sub>2</sub> big or 40 gm      |
| Guava         | 1 medium                                       | Chickoo  | 1 small                                       |
| Orange        | 1 medium                                       | Mango    | <sup>1</sup> / <sub>2</sub> medium or 75 gm   |
| Papaya        | <sup>1</sup> / <sub>3</sub> medium or 3 slices | Grapes   | 10 – 12 pieces                                |
| Pineapple     | 2 - 3 slices                                   | Sitaphal | <sup>1</sup> / <sub>2</sub> big size or 50 gm |
| Sweet lime    | 1 medium                                       |          |                                               |
| Coconut water | 150 ml                                         |          |                                               |
| Jamun         | 100 gm                                         |          |                                               |

- Fruit to be avoided with meal as it increases the carbohydrate load of the meal.
- Fruit can be had 2 hours after a meal/midmorning snack.

**Nuts & Oil seeds**

| Food Item       | Quantity (gm) | Kcal | Protein (gm) | Carb (gm) | Fat (gm) |
|-----------------|---------------|------|--------------|-----------|----------|
| Coconut (dry)   | 15            | 100  | 1.02         | 2.5       | 10       |
| Coconut (fresh) | 25            | 100  | 1.12         | 3.0       | 10.4     |
| Groundnut       | 15            | 100  | 3.79         | 8.0       | 6        |



## Milk Exchange

Each milk exchange contains Protein 1 – 3 gm, Carbohydrate 4 gm, fat 4 gm, Kcal 65.

|                    |                             |
|--------------------|-----------------------------|
| Cow's milk         | 100 ml ( $\frac{1}{2}$ cup) |
| Buffalo's milk     | 50 ml ( $\frac{1}{4}$ cup)  |
| Curds              | 100 ml ( $\frac{1}{2}$ cup) |
| Skimmed milk       | 200 ml (1 cup)              |
| Skimmed milk power | 18 gm. (5 tbsp.)            |
| Whole milk powder  | 13 gm. (3 tbsp.)            |

## Fat Exchange

Each fat exchange contains fat 10 gm, protein & carbohydrate nil, Kcal 90.

|                   |                                |
|-------------------|--------------------------------|
| Oil (any variety) | 10 gm. (3 tbsp.)               |
| Ghee              | 10 gm. (2 tbsp.)               |
| Butter            | 12 gm. (2 $\frac{1}{2}$ tbsp.) |
| Margarine         | 10 gm                          |

### Few Points to be noted:

- Before starting a diet plan we should consult a physician to rule out any associated disease condition.
- Regarding diet it is better to consult a registered dietician (RD).
- Start gradually and stick to the required diet regimen.
- Try to choose locally available, traditionally suitable food stuffs.
- Above mentioned diet exchange list you can follow as an example only. Your dietician may provide you with an exhaustive national as well as international food exchange list.
- Please, do not become obsessive with the numbers; there may be some plus/minus.
- Always remain physically active. Try to ignore stress; your diet should not create extra stress for you.
- Enjoy your foods, chew it properly.
- Follow 3 meals and 3 snacks policy. Do not skip breakfast.
- Take some good quality protein in breakfast.
- As far as possible eat homemade foods only. Prepare your meals yourselves or by some near and dear ones. Housemaids may prepare your tasty meals but it may contain more sugar, salt or oil.
- Always take a light dinner. There should be a gap of 2 hours between dinner and bed.

### EAT HEALTHY & STAY HEALTHY

### **SOME FACTS ABOUT PREGNANCY**

Dr. L Barua

Child birth is a biological function and integral part of the social environment, bringing joy to the mother and family. This can turn into a tragedy where a woman loses her child or suffers catastrophe herself, while performing this social obligation.

Pregnancy occurs during the reproductive period (13-44 years) of a woman.

The average duration of pregnancy is 250 days or forty weeks on 9 calendar months and 7 days after the 1<sup>st</sup> day of last menstrual cycle.

The pregnancy can be divided into three periods

- (1) First trimester- the first 12 weeks.
- (2) Second trimester- the 13<sup>th</sup> week to 28<sup>th</sup> week
- (3) Third trimester- 29<sup>th</sup> weeks to 40<sup>th</sup> week

#### **Clinical features of 1<sup>st</sup> trimester**

- (1) Amenorrhea or cessation of menstruation is usually the first symptom.
- (2) Morning sickness- It appears in the second month in about half the cases but usually do not last beyond the third month. Nausea with or without vomiting commonly occurs in the morning but may be present in any time of the day.
- (3) Feeling of fullness, tingling sensation and enlargement of breast are usually present from the second month.
- (4) Frequency of micturition may be present due to bladder irritability.
- (5) Constipation, sleepiness, excessive salivation, loss of appetite and craving for unusual articles of food may be present.

#### **Clinical features of 2<sup>nd</sup> trimester**

- (1) Amenorrhea for 4-7 months is present.
- (2) Progressive enlargement of abdomen.
- (3) Quickening or fetal movement for the first time is felt at 16-20 weeks.
- (4) Pigmentary changes on the face and forehead can be visible after 24 weeks.
- (5) Secondary areola or halo of pigmentation around the primary areola of the breast is visible around 20 weeks.

- (6) Colostrum can be expressed from the nipples.
- (7) Linea nigra- a linear pigmentation in the middle appears from the symphysis pubis to the ensiform cartilage.

#### Clinical features of the 3<sup>rd</sup> trimester

- (1) Amenorrhea
- (2) Pressure symptoms i.e. oedema (swelling) of hands and feet, breathless on exertion and palpitation occurs due to increased intra abdominal pressure.
- (3) Increasing enlargement of the abdomen.
- (4) Frequency of micturition (urination)

#### Obstetrical care includes:

- (1) Antenatal care during pregnancy
- (2) Intranatal care during labour
- (3) Post natal care during puerperium

A pregnant woman should start her first check-up at about 6 weeks from the last menstrual period. Object of antenatal care is to provide medical, nutritional, psychological, obstetrical and contraceptive care to the expectant women. This can not only bring to the mother a positive mental and physical health but also safety to the mother during childbirth to herself as well as her new born.

From the first check up until 28 weeks the expectant mother should come for check up every 4 weeks. Thereafter she should come every 2 weeks until 36<sup>th</sup> week and then every week till term. During her antenatal check-up the mother should be immunised against tetanus.

Diet in pregnant women should provide slightly higher amount of calories, protein, mineral and vitamins than required in a non-pregnant women. Energy in form of carbohydrate is important. Glucose is a critical fetal nutrient and if its supply is reduced growth restriction may result.

Protein malnutrition before 26<sup>th</sup> week can cause intra uterine growth retardation of the fetus.

Adequate micronutrient and intake of fibre by the mother is very important for the growth of fetus. Essential micronutrient includes riboflavin, niacin, pyridoxine, thiamine, folic acid, iron, magnesium, phosphorus, calcium, zinc and vitamin A.

Folic acid is very essential for the development of the fetus. Sources of folic acid are green leafy vegetables, legumes, nuts, jaggery, apple, pomegranate, and banana.

Sources of iron are liver, meat, poultry, fish, eggs, dry fruit, beans, green leafy vegetable, legumes, nuts, jaggery, apple, pomegranate and banana.

#### Use of drugs during pregnancy

Drugs are sparingly used during pregnancy. A drug should only be used in pregnancy when its advantages outweigh the disadvantages of causing fetal malfunction and damage.

Pregnant ladies can be divided into low risk cases and high risk cases. The following are some of the high risk cases.

The following are some of the high risk cases.

1. All the first pregnancies and women having four and more pregnancies earlier.
2. Women above 35 years of and below 19 years.
3. All the women of height of below 145 cm (4 ft 10 inch).
4. Patients having bad obstetric history like earlier difficult labour, loss of baby, caesarean section, hypertension in previous pregnancy, recurrent premature, labour or abortion, intra uterine fetal death.
5. Malpresentation or multiple pregnancies.
6. Obstetrical complications like pregnancy haemorrhage and pregnancy induced hypertension.
7. High risk fetus like premature labour, intra uterine growth retardation, Rh incompatibility fetus, post maturity.
8. Medical factors- pregnancy associated with anaemia and under nutrition, cardiac disease, hypertension, diabetic mellitus, renal disease, chest disease, hepatitis, syphilis, psychiatric disorder, thyroid disorder, obesity.

**N.B.: Always remember to consult your gynaecologist for safe motherhood.**

## STROKE

Dr. P Sarmah

Stroke occurs due to the sudden impairment of blood supply to a part of the brain and thus reducing or preventing oxygen and nutrient supply to the brain which leads to sudden brain dysfunction and results in sudden neurological deficit. The severity of a stroke depends on the extent of brain damage and the location on the brain where the damage has occurred.

Strokes can be classified into two types-one caused by blockage of blood supply termed as ischemic stroke and second by the rupture of the blood vessels of the brain termed as hemorrhagic stroke. Though the blockage of a brain blood vessel is the most frequent cause of stroke and it is responsible for nearly 80% of the cases, the people of NORTH-EAST INDIA mostly suffer from rupture of blood vessels which is very dangerous.

The immediate symptoms of stroke are sudden feeling of weakness in one side of the body, facial deviation to one side, slurring of speech, confusion, gait disturbances, severe headache, vomiting etc. There may also be a mild stroke which is called Transient Ischemic Attack symptoms resolve within 24 hrs of time.

The WHO estimates that 80% of stroke cases in the globe occurs in low and middle income countries like INDIA. Everyday not less than 80 people in Assam which has a population of around 30 million suffer from stroke. Stroke is the 2<sup>nd</sup> cause of death after coronary artery disease.

Many patients die on the way to the hospital as the common people have very little knowledge on stroke. The relatives of the patients take a longer time to recognize a stroke and that way the Golden time period (3hrs after the stroke) is lost. 70% of patients can be treated and patients can go back to their work after treatment.

Risk factors for stroke are Hypertension, Diabetes, Dyslipidemia, Smoking, Alcohol consumption, physical inactivity. Also, the risk of stroke increases with age. Various studies confirm that males are more to stroke than females. A family history of stroke should not be ignored.

Some diseases like connective tissue disorder, Rheumatic Heart Disease, bleeding disorder etc are responsible for ischemic stroke in young. Some other condition like arterio-venous malformation, moyamoya disease are the condition of abnormal cerebral blood vessels which are the causes of stroke in young patients.

Stroke can be diagnosed in CT and MRI brain. Up to 24 -48 hrs of time from the time of appearing symptoms, ischemic stroke is not detected in CT brain.

Stroke can be treated both conservatively and surgically depending on the site and severity of the stroke. Therefore it is very important to take the patient to tertiary care hospital where both Neurology and Neuro Surgery team is available. Physiotherapy plays a very important role in recovering of the deficits.

Therefore Awareness regarding risk factors, symptoms of stroke and life- style modification is very much important in preventing and reducing the loss of many precious lives and post stroke disabilities.



### USES OF MEDICINAL PLANT FOR PREVENTION OF VARIOUS COMMON DISEASES

Mr. Gunamani Das

Medicinal plant plays a pivotal role for prevention of many diseases since ancient times till today. We may restrict some diseases to some extent by using it. There are several hundred of species of medicinal plants existing in our country. Some of the common such type of plants are – Sarpagandha (Rouvolfia Serpentina), Tulsi, Neem, Ashwagandha, (withania Somnifera), vasaka, Arjun(Terminalia arjuna),Amlakhi(Emblica Officinalis). The North Eastern region is one of the hot spot of the biodiversity among the twelve main hot spot of the world.

**Sarpagandha:** Sarpagandha is cultivated for its alkaloid. In assamese it is known as sarpaganha, in hindi it is known as chotachand and in Bengali it is known as Chandra, The chief use of the drug is as a sedative and hypotonic and for reducing blood pressure. The drug should not be given to person suffering from bronchitis, asthma or gastric ulcers. The roots of the plants are useful also in disease of bowels and in fever.

**Tulsi:** This is known by the Indians as a sacred plant. The leaves and seeds of the plant are medicinal. The juice or infusion of the leaves is useful in bronchitis, digestive complaints, catarrh. It is dropped in ears to relieve earache. It is also applied locally on ringworm and other skin diseases. Seeds are useful in complaints of urinary system.

**Neem:** Neem is a very well-known tree of India who gives is shadow, purity the air from pollution. The drug of neem consists of dried stem bark, leaves and root bark. The bark is bitter tonic a stringent and antiperiodic. It is useful in fever. The leaves are largely applied on skin disease and boils.

**Ashwagandha:** Ashwagandha is an alternative plant for medicinal uses. Its roots, leaves and seeds have some medicinal in sexual and general weakness and rheumatism. It is diuretic i.e it promotes urination, acts as narcotic and removes functional obstruction of body. Root powder is used in ulcers and inflammations as well as antibiotic mere particularly antibacterial.

**Vasaka:** In assamese it is known as Bahaka and it is known as Adulsa in Marathi and Aadathodai in Tamil Nadu. The drug vasaka comprises the fresh and dried leaves of the plant. The main use of vasala is an expectorant. It is given in the form if juice, syrup or decoctin. It softens the tick sputum, facilitates it's coming out and thus brings about the quick relief in bronchitis.

In the present scenario of the world it is established that some disease grows due to pollution and dirty environment. We may restrict this by plantation of medicinal plant, common trees as well as flowering plant.

*Sources: (1) Horticultural Crops of Assam-AAU Jorhat  
(2) Medicinal plants- S K Jain  
(3) Puspa Sajja- Dr. G Khanikar  
(4) Common trees- H Santapaw  
(5) Asamor Udhbid Kosh-P C Gogoi*

*P.S: The article written above is of informative nature. Please consult your doctor before using these medicinal plants which are mentioned above.*

**PHYSIOTHERAPY MANAGEMENT FOR DIABETIC NEUROPATHY**

Mr. Kandarpa Jyoti Das

The most common and annoying complication of diabetes mellitus is diabetic neuropathy. It leads to greater morbidity and mortality. Neurological complications present in both type 1 and type 2 diabetes mellitus. Diabetic neuropathy has a major impact on patient's quality of life. Diabetic population over a period of time may develop the nerve damage. In most of the diabetic neuropathic cases the patient will exhibit the signs and symptoms of neuropathy, but in some cases they may not exhibit any symptoms. Sustained neuropathic pain impairs the sleep and re-creational activities and also affects the emotional well-being of the patient.

The causative factors for diabetic neuropathy include persistent hyperglycemia, micro-vascular compromise, oxidative and nitrosative stress, defective neurotrophism and autoimmune mediated nerve destruction.

Diabetic neuropathy can be classified as-

1) Peripheral neuropathy: - This is the most common type of neuropathy and it is characterized by diffuse damage to the peripheral nerve fibers. This is most happening complication of diabetes. It affects feet, legs, hands and arms. The common symptoms includes

- Pain
- Numbness
- Burning /stabbing shock sensation
- Tingling sensation
- Muscle weakness and cramps
- Loss of co-ordination and balance

2) Autonomic neuropathy: - This is result from the nerves that affecting the involuntary actions. This may include cardiovascular, gastrointestinal, genitourinary and neuroendocrine and sometimes it may be life threatening.

3) Focal neuropathy: - This is also known as mononeuropathy. This is restricted to one or a group of nerves or an area of body. It may cause pain in a single limited area of the body such as foot or wrist. Pain may be present in and around eyes causing difficulty in movement of eyeballs and double vision when the cranial nerve is affected. Pain may occur in the chest or abdominal area.

Physiotherapy management: - Physiotherapy plays an effective role in treating diabetic neuropathy. Physiotherapy management aims to elevate the pain, numbness, tingling sensation, muscle cramps. Also it aims to restore the muscle strength, to improve the coordination and balance to have a better gait pattern.

**TENS (transcutaneous electrical nerve stimulation):-** Low frequency TENS can be used to relieve the neuropathic pain, and to improve the mobility. It uses electrode that placed over the skin near to the site of the pain. Transcutaneous electrical impulses modulate the transmission of pain impulses to the brain by restricting the pre-synaptic transmission of the dorsal horn of the spinal cord which directly inhibits the nociceptive stimuli. This is also an element of endogenous pain control via release of enkephalins, endorphins which are the natural opioids. Generally the TENS application to the patient is well tolerated, but it may cause skin burning and skin irritations in some cases. Also it is contraindicated to the patient with pacemakers and in pregnancy.

**Exercise therapy:** - Exercise therapy programme can be used to reduce the atrophy, contractures and spasm. Manual therapy is a useful exercise technique that includes stretching and strengthening. Stretching is done to maintain the length of the muscle and to maintain complete range of motion. Also the strengthening exercise is done to reduce the muscle weakness and muscle wasting.

**Aerobic training:** - Aerobic training like swimming and stationary bicycling can help in peripheral neuropathy. But activities like long distance walking, running should be avoided.

HEALTH EVENTS ORGANISED BY IITG HOSPITAL DURING THE YEAR 2017



Diabetes Camp organised in IITG on 10<sup>th</sup> January 2017 in association with Sun Valley Hospital



World Health Day organised in IITG Hospital on 7<sup>th</sup> April 2017



HEALTH EVENTS ORGANISED BY IITG HOSPITAL DURING THE YEAR 2017



First-aid training camp for Jr. Assistant (Hostels) organised in IITG Hospital on 9<sup>th</sup> May & 11<sup>th</sup> May 2017



World Physiotherapy Day organised in IITG Hospital on 8<sup>th</sup> September 2017



## HEALTH EVENTS ORGANISED BY IITG HOSPITAL DURING THE YEAR 2017

World Diabetes Day 2017 organised by IITG Hospital on 14<sup>th</sup> November 2017

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