Module IV: Vital signs, Lifestyle/Hypo kinetic diseases and its management

Vital signs- Pulse rate, Respiratory rate, Blood pressure, Body temperature,Diseases- Diabetes, Hypertension, Obesity, Osteoporosis, CHD, Back pain.Fitness assessment- Body mass index, Waist to Hip Ratio,

VITAL SIGNS, PULSE RATE, RESPIRATORY RATE, BLOOD PRESSURE, BODY TEMPERATURE

Vital signs are a group of the 4 to 6 most important signs that indicate the status of the body's vital (life-sustaining) functions. These measurements are taken to help assess the general physical health of a person, give clues to possible diseases, and show progress toward recovery. The normal ranges for a person's vital signs vary with age, weight, gender, and overall health. There are four primary vital signs: Pulse rate, Respiratory rate, Blood pressure, Body temperature.

Pulse rate: The pulse is the rate at which the heart beats while pumping blood through the arteries, recorded as beats per minute (bpm). It may also be called "heart rate". The pulse is commonly taken at the wrist (radial artery). Alternative sites include the elbow (brachial artery), the neck (carotid artery), behind the knee (popliteal artery), or in the foot (dorsalispedis or posterior tibial arteries). The pulse rate can also be measured by listening directly to the heartbeat using a stethoscope. The pulse varies with age: a newborn or infant can have a heart rate of 130–150 bpm, a kid of 100–120 bpm, an older child of 60–100 bpm, an adolescent of 80–100 bpm, and an adult of 50–80 bpm.

Respiratory rate; Varies with age, but the normal reference range for an adult is 16–20 breaths per minute. The value of respiratory rate as an indicator of potential respiratory dysfunction has been investigated but findings suggest it is of limited value. Respiratory rate is a clear indicator of acidotic states, as the main function of respiration is removal of CO_2 leaving bicarbonate base in circulation.

Blood pressure; the blood pressure is recorded as two readings: a high systolic pressure, which occurs during the maximal contraction of the heart, and the lower diastolic or resting pressure. A normal blood pressure would be 120 being the systolic over 80, the diastolic. Usually the blood pressure is read from the left arm unless there is some damage to the arm. The difference between the systolic and diastolic pressure is called the pulse pressure. The measurement of these pressures is now usually done with an aneroid or electronic sphygmomanometer. The classic measurement device is a mercury sphygmomanometer, using a column of mercury measured off in millimeters. There is no natural 'normal' value for blood pressure, but rather a range of values that on increasing are associated with increased risks. The guideline acceptable reading also takes into account other co-factors for disease. Therefore, elevated blood pressure (hypertension) is variously defined when the systolic number is persistently over 140–160 mmHg. Low blood pressure is hypotension. Blood pressures are also taken at other portions of the extremities. These pressures are called segmental blood pressures and are used to evaluate blockage or arterial occlusion in a limb.

Temperature: Temperature recording gives an indication of core body temperature which is normally tightly controlled (thermoregulation) as it affects the rate of chemical reactions. Body temperature is maintained through a balance of the heat produced by the body and the heat lost from the body. Temperature can be recorded in order to establish a baseline for the individual's normal body temperature for the site and measuring conditions. The main reason for checking body temperature is to solicit any signs of systemic infection or inflammation in the presence of a fever (temp > 38.5 °C/101.3 °F or sustained temp > 38 °C/100.4 °F), or elevated significantly above the individual's normal temperature. Other causes of elevated temperature include hyperthermia. Temperature depression (hypothermia) also needs to be evaluated. It is also noteworthy to review the trend of the patient's temperature. A fever of 38 °C is not necessarily indicate an ominous sign if the patient's previous temperature has been higher.

Lifestyle/Hypokinetic diseases

Diseases linked with the way people live their life. This is commonly caused by alcohol, drug and smoking abuse as well as lack of physical activity and unhealthy eating. Diseases that impact on our lifestyle are heart disease, stroke, obesity and type II diabetes.

The diseases that appear to increase in frequency as countries become more industrialized and people live longer. They can include Alzheimer's disease, arthritis atherosclerosis, asthma, cancer, chronic liver disease, chronic obstructive pulmonary disease, type 2 diabetes, heart disease, metabolic syndrome, chronic renal failure, osteoporosis, stroke, depression, obesity and vascular dementia.

Diet and lifestyle are major factors thought to influence susceptibility to many diseases. Drug abuse, tobacco smoking, and alcohol drinking, as well as a lack of exercise may also increase the risk of developing certain diseases, Between 1995 and 2005 813,000 Australians were hospitalized due to alcohol.In many Western countries, people began to consume more meat, dairy products, vegetable oils, tobacco, sugary foods, Coca-Cola, and alcoholic beverages during the latter half of the 20th century. People also developed sedentary lifestyles and greater rates of obesity. In 2014, 11.2 million Australians were overweight or obese Rates of colorectal cancer, breast cancer, prostate cancer, endometrial cancer and lung cancer started increasing after this dietary change. People in developing countries, whose diets still depend largely on low-sugar starchy foods with little meat or fat have lower rates of these cancers. Causes are not just from smoking and alcohol abuse. Adults can develop lifestyle diseases through behavioural factors that impact on them. These can be unemployment, unsafe life, poor social environment, working conditions, stress and home life can change a person's lifestyle to increase their risk of developing one of these diseases

DIABETES MELLITUS

Commonly referred to as diabetes, is a group of metabolic disorders in which there are high blood sugar levels over a prolonged period. Symptoms of high blood sugar include frequent urination, increased thirst, and increased hunger.If left untreated, diabetes can cause many complications. Acute complications can include diabetic ketoacidosis, hyperosmolar hyperglycemic state, or death. Serious long-term complications include cardiovascular disease, stroke, chronic kidney disease, foot ulcers, and damage to the eyes. Diabetes is due to either the pancreas not producing enough insulin or the cells of the body not responding properly to the insulin produced.

Types of diabetes mellitus.

Type 1 DM results from the pancreas's failure to produce enough insulin. This form was previously referred to as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes".The cause is unknown.

Type 2 DM begins with insulin resistance, a condition in which cells fail to respond to insulin properly.As the disease progresses a lack of insulin may also develop. This form was previously referred to as "non insulin-dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes". The most common cause is excessive body weight and not enough exercise.

Prevention and treatment involve maintaining a healthy diet, regular physical exercise, a normal body weight, and avoiding use of tobacco. Control of blood pressure and maintaining proper foot care are important for people with the disease. Type 1 DM must be managed with insulin injections. Type 2 DM may be treated with medications with or without insulin. Insulin and some oral medications can cause low blood sugar. Weight loss surgery in those with obesity is sometimes an effective measure in those with type 2 DM. Gestational diabetes usually resolves after the birth of the baby.As of 2015, an estimated 415 million people had diabetes worldwide, with type 2 DM making up about 90% of the cases. This represents 8.3% of the adult population, with equal rates in both women and men.As of 2014, trends suggested the rate would continue to rise. Diabetes at least doubles a person's risk of early death. From 2012 to 2015, approximately 1.5 to 5.0 million deaths each year resulted from diabetes.

CAUSES OF DM

*. Genetic Factor *. Obesity *. Impaired Pancreases *. Unhealthy Life Style
*. Stress *. Hyper tension *. Smoking *. Sedentary life Style
*. Over eating *. Lack of Physical Activity.

SYMPTOMS

*. Frequent urination. *. Unquenchable thirst. *. Blurred vision *. Constant hunger.
*. Fatigue *. Nausea. *. Frequent infection. *.Slow healing wounds.
*. Excess sweating *. Weight loss *. Breath smells like nail polish.

MANAGEMENT

*. Life style modification *. Appropriate diet *. Regular physical activity
*. Medication if required. *. Maintenance of body weight.

HYPERTENSION

Also known as high blood pressure (HBP) is a long-term medical condition in which the blood pressure in the arteries is persistently elevated. High blood pressure usually does not cause symptoms. Long-term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, peripheral vascular disease, vision loss, and chronic kidney disease.

CAUSES

*. Sedentary lifeStyle *. Obesity *. Increased age *. Stress *. Genetic Factor
*. Excessive alcohol *. Tobacco *. High cholesterol *. Diabetes *. High intake of salt
*. Low calcium& potassium in food *. Coronary artery disease

SYMPTOMS

*. Excessive perspiration *. Muscle cramp *. Weakness
*. Frequent urination. *. Rapid or irregular heart beat.

MANAGEMENT

*. Meditation *. Pranayama *. Savasana *. Lose weight
*. Sufficient sleep *. Quit smoking *. Healthy diet *. Reduce salt intake
*. Life style modification *. Cut down alcohol *. Regular physical activity

OBESITY

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. People are generally considered obese when their body mass index (BMI), a measurement obtained by dividing a person's weight by the square of the person's height, is over 30 kg/m^2, with the range 25–30 kg/m^2 defined as overweight. Obesity increases the likelihood of various diseases and conditions, particularly cardiovascular diseases, type 2 diabetes, obstructive sleep apnea, certain types of cancer, osteoarthritis and depression. Obesity is most commonly caused by a combination of excessive food intake, lack of physical activity, and genetic susceptibility. A few cases are caused primarily by genes, endocrin disorders, medications, or mental disorder. Obesity is mostly preventable through a combination of social changes and personal choices. Changes to diet and exercising are the main treatments. Diet quality can be improved by reducing the consumption of energy-dense foods, such as those high in fat and sugars, and by increasing the intake of dietary fiber. Medications may be used, along with a suitable diet, to reduce appetite or decrease fat absorption. If diet, exercise, and medication are not effective, a gastric balloon or surgery may be performed to reduce stomach volume or length of the intestines, leading to feeling full earlier or a reduced ability to absorb nutrients from food. Obesity is a leading preventable cause of death worldwide, with increasing rates in adults and children. In 2015, 600 million adults (12%) and 100 million children were obese. Obesity is more common in women than men. Authorities view it as one of the most serious public health problems of the 21st century. Obesity is stigmatized in much of the modern world (particularly in the Western world), though it was seen as a symbol of wealth and fertility at other times in history and still is in some parts of the world. In 2013, the American Medical Association classified obesity as a disease.

CAUSES

*. Geneic 40-80% if both the parents are obese *. Age lowered basal metabolic rate
*. Food habit *. Increase in the number and size of fat cells in the body.
*. Sedentary life style *. Mal function of endocrine glands (pituitary,thyroid)

MANAGEMENT

*. Healthy diet *. Starving *. Surgery *. Medication
*. Life style modification *. Appropriate physical activity.

OSTEOPOROSIS

Osteoporosis is a disease where increased bone weakness increases the risk of a broken bone. It is the most common reason for a broken bone among the elderly. Bones that commonly break include the vertebrae in the spine, the bones of the forearm, and the hip. Until a broken bone occurs there are typically no symptoms. Bones may weaken to such a degree that a break may occur with minor stress or spontaneously. Chronic pain and a decreased ability to carry out normal activities may occur following a broken bone.Osteoporosis may also occur due to a number of diseases or treatments including alcoholism, anorexia, hyperthyroidism, kidney disease, and surgical removal of the ovaries. Certain medications increase the rate of bone loss including somechemotherapy, proton pump inhibitors, selective serotonin reuptake inhibitors,

and glucocorticosteroids. Not enough exercise and smoking are also risk factors. Prevention of osteoporosis includes a proper diet during childhood and efforts to avoid medications that cause the condition. Efforts to prevent broken bones in those with osteoporosis include a good diet, exercise, and fall prevention. Lifestyle changes such as stopping smoking and not drinking alcohol may help.

CAUSE

*. Sedentary life *. Smoking
*. Sex hormones infrequent menstrual cycles and estrogen loss *. Lack of calcium & Vitamin D
*. Genetic factor women's are more prone to osteoporosis. *. Low body weight
*. Body size small, thin bonded women are at greater risk *. Lack of appropriate exercise

MANAGEMENT

*. Medication *. Strength training *. Avoid smoking *. Avoid alcohol *. Improve nutrition *. Calcium supplementation *. Consumption of vitamin D *. Hormone replacement therapy

Coronary Heart Disease (CHD)

Coronary heart disease (CHD) is a narrowing of the small blood vessels that supply blood and oxygen to the heart. CHD is also called coronary artery disease. Coronary heart disease (CHD) is the leading cause of death in the United States for men and women.

CAUSE

Coronary heart disease is caused by the buildup of plaque in the arteries to your heart. This may also be called hardening of the arteries.Fatty material and other substances form a plaque build-up on the walls of your coronary arteries. The coronary arteries bring blood and oxygen to your heart. This buildup causes the arteries to get narrow.As a result, blood flow to the heart can slow down or stop.

A risk factor for heart disease is something that increases your chance of getting it. You cannot change some risk factors for heart disease, but others you can change. See: Heart disease - risk factors

SYMPTOMS

It may be very noticeable, but sometimes you can have the disease and not have any symptoms. This is especially true in the early stages of heart disease. Chest pain or discomfort (angina) is the most common symptom. You feel this pain when the heart is not getting enough blood or oxygen. How bad the pain is varies from person to person. It may feel heavy or like someone is squeezing your heart. You may feel it under your breast bone (sternum), but also in your neck, arms, stomach, or upper back. The pain usually occurs with activity or emotion, and goes away with rest or a medicine called nitroglycerin. Other symptoms include shortness of breath and fatigue with activity (exertion). Women, elderly people, and people with diabetes are more likely to have symptoms other than chest pain, such as:

*. Fatigue *. Shortness of breath *. General weakness

BACK PAIN

Back pain is common with about nine out of ten adults experiencing it at some point in their life, and five out of ten working adults having it every year. However, it is rare for it to be permanently disabling, and in most cases of herniated disks rest, injections or surgery have similar general pain resolution outcomes on average after one year. In the United States, acute low back pain is the fifth most common reason for physician visits and causes 40% of missed days off work. Additionally, it is the single leading cause of disability worldwide.

CAUSES

*. Accident *. Lifting heavy object *. Improper bending *. Stress
*. Strain *. Over stretching *. Sudden jerk *. Improper warm up
*. Bad posture *. Weak back muscle *. Poor fitness level
*. Injury to the muscle, bone, or nerves of the Spain

MANAGEMENT

*.Walk 30 minutes daily
*. Do core exercise 2-3 times per week
*. Apply 15min heat in the morning and 15 min ice in the evening
*. Get up from the chair every 30 min

FITNESS ASSESSMENT

Cardio respiratory function 12 min run or walk test

	Cooper test
Body composition	skin fold test
Abdominal muscular test	modified sit up
Flexibility	sit and reach test
Muscular strength	hand grip strength/ grip dynamo meter test