**BLOOD PRESSURE & HAEMOGLOBIN MEASUREMENT FOR SMOKERS & DRINKERS**

**INTRODUCTION**

**Blood Pressure:** Blood pressure is the pressure of the blood in the arteries as it pumped around the body by the heart. Blood pressure does not stay the same all the time. It is affected by various factors including body position, breathing, emotional state, exercise and sleep. The force of blood against artery walls is recorded as two numbers (1. Systolic pressure-heart contracts, 2. Diastolic pressure-heart relaxes) normal blood pressure should be around 120/80, with the systolic number on top. Blood pressure rises and falls throughout the day, but it can cause health problems if it stays high for a long time which leads to heart disease and stroke.

**Haemoglobin:** Haemoglobin is a red pigment present in RBC of blood. It is a conjugated protein & chromo proteins. Haemoglobin is a protein in red blood cells which contains iron. It is used to transport oxygen around the human body. Red blood cells get their color from haemoglobin which is red. There are millions of haemoglobin molecules in each red blood cell and millions of red blood cells in the human body. Each red cell has 640 million molecules of haemoglobin. Its molecular weight is 68000. When haemoglobin has oxygen attached, it is called oxy-haemoglobin.

**AIM & OBJECTIVES:**

To compare Blood Pressure & Haemoglobin for Smokers & Drinkers with 10 samples, 5 samples for smokers & other 5 samples for drinkers.

**MATERIALS & METHODOLOGY:**

**Blood Pressure:**

* Spygmomanometer

**Haemoglobin:**

* Sahli’haemoglobinometer
* 0.1N hydrochloric acid
* Distilled water
* Pasteur pipette

**PROCEDURE:**

**Blood Pressure:**

Spygmomanometer is kept at the level of heart of the subject and cuff is wrapped around the upper arm just above the elbow. The chest piece of the stethoscope is placed upon the brachial artery. The other ends of the stethoscope are connected two ears. The bag of the cuff is filled by the pump up to 240 mmHg pressure. The pressure inside the cuff is released slowly by loosing the air with the air adjustments screw. As the pressure is released sudden appearance and disappearance of a sound is heard and recorded. Sudden onset of trapping sound is systolic blood pressure and the sudden disappearance of sound is diastolic pressure.

**PRECAUTIONS:**

The cuff should be wrapped tightly, the cuff bag should be air free, The apparatus should be kept at level of heart, pumping and measuring should be done carefully.

**CLINICAL SIGNIFICANCE OF BLOOD PRESSURE**:

Blood pressure, more than the normal range is called hypertension and blood pressure less than the normal range is called hypotension.

**PROCEDURE FOR HAEMOGLOBIN :**

Place N/10 HCL in diluting tube up to the mark 20. Take blood in the haemoglobin pipette up to 20-cubic-mm mark and blow it into diluting tube and rinse well. After 10 minutes add distilled water in drops and mix the tube until it has exactly the same color as the comparison standards. Note the reading, which indicates the percentage of haemoglobin.

**PRECAUTIONS :**

1. Pipetting of blood should be done cautiously
2. Mix the blood properly with HCL by using stirrer
3. Match the color cautiously.

**CLINICAL SIGNIFICANCE OF HAEMOGLOBIN ESTIMATION:**

Haemoglobin estimation below normal level indicates that the patient is anemic. In this condition there is not enough Haemoglobin available to carry sufficient oxygen from the lungs to tissue.

**Types of blood pressure:**

Depending on the (nature of blood vessel)

>arterial B.P

>venous B.P

>capillary B.P

**Cigarettes raise your blood pressure :**

The nicotine in cigarette smoke is a big part of the problem. It raises your blood pressure and heart rate. Within 20 minutes of smoking a cigarette, The heightened blood pressure from nicotine descends to a normal rang with the first few puffs of smoke, the smokers blood pressure increases from 10 to 15 percent, according to smoking cessation.

**What is high blood pressure?**

It is called “Silent killer” because most people have no signs or symptoms. Blood pressure that stays elevated

>. 140/90

>.139/80 if you already have:

1. diabetes

2. mild kidney disease

3. heart disease

**Management of hypertension :**

**NON DRUG THERAPHY:**

1. Stop smoking
2. Control obesity
3. Regular exercise
4. Decrease salt intake

**DRUG THERAPHY:**

1. Beta blockers
2. Calcium channel blockers
3. Vasodialators
4. Diuretics
5. ACE inhibitors
6. VMC depressors

**What factors are known to increase blood pressure:**

>. Smoking

>. Being overweight or obese

>. Lack of physical activity

>.Too much salt in the diet

>. Too much alcohol consumption

>. Stress

>. Older age

>. Genetics

>. Chronic kidney disease

**Stop smoking:**

Smoking damages blood vessels walls and causes early hardening of the arteries. Nicotine narrows your blood vessels and forces your heart to work harder.

Foods that help lower blood pressure :

1. Leafy greens
2. Berries
3. Red beets
4. Skim milk and yogurt
5. Oatmeal
6. Bananas
7. Salmon, mackerel, and fish with omega
8. Seeds
9. Garlic and herbs
10. Dark chocolate
11. Pistachios
12. Olive oil
13. Pomegranates

**Alcohol raises your blood pressure:**

Drinking too much alcohol can raise blood pressure to unhealthy levels. Having more than three drinks in one sitting temporarily increases your blood pressure, but repeated binge drinking can lead to long-term increases. If have high blood pressure, avoid alcohol. drinking excessive amount of alcohol over the long term causes chronic high blood pressure.

**Signs of liver damage from alcohol:**

1.pain or tenderness in the abdomen

2. jaundice

3. general tiredness

4. fever

5. nausea

6. loss of appetite

**Synthesis of haemoglobin** :

>Haem&globin produced at two different sites in the cells

>Haem in mitochondria

>globin in polyribosomes

**Structure of haemoglobin**:

Haemoglobin is a globular protein made up of four subunits, each of which contains a polypeptide chain called globin and a haem group. The globin tertiary structure comprises a helical structures joined by non-helical segments. Four such globins are arranged together, giving rise to the spherical quaternary structure of haemoglobin. Haemoglobin are classified into different types, depending on the combination of the two sets of globin units. Most of the haemoglobin present in adult humans comprises 2 (alpha globins) and 2 (beta globins)

**Function of haemoglobin**:

>oxygenation not oxidation…..

>one Haemoglobin can bind to four o2 molecules….

>Less than 0.01 sec required for oxygenation…..

>Transport oxygen to tissues

>Transport (co2) to lungs

>Maintain acid base balance (As a buffer)

**Types of Haemoglobin:**

**NORMAL:**

HbA(97%)

HbA2(2%)

HbF(1%)

**ABNORMAL:**

Carboxy Hb

Met Hb

Sulf Hb

**Disadvantages if haemoglobin present in plasma:**

>Increase viscosity.

>Increase osmotic pressure.

>Rapid destruction by reticuloendothelial system.

>Haemoglobinuria (excretion through kidney)

**Causes of low Haemoglobin levels**:

>Nutritional Deficiency

>Inability to absorb iron

>Blood loss

>Lowered production of red blood cells

>destruction of blood cells

**Symptoms of low haemoglobin:**

**GENERAL SYMPTOMS**

-Feeling tiredness

-Headache

-Dizziness

-Lack of concentration

-Irregular heart beat

-Pale nail beds, skin, and gums.

**RARE SYMPTOMS:**

-Swelling in arms and legs

-Vomiting

-Bloody stool

**How to increase haemoglobin levels**:

-Food sources and supplements

-Avoid iron blockers

-Reduce intake of foods with oxalic acid

-Avoid foods with gluten

-Increase intake of vitamin c

**Normal values of haemoglobin**:

**MALE:** 14-17gm/100ml.

**FEMALE**: 12-15gm/100ml.

**RESULT:**

**FOR SMOKERS**:

|  |  |  |
| --- | --- | --- |
| **PATIENT NAME** | **Blood Pressure** | **Haemoglobin** |
| 1.Althaf | BP: 104/71 | HB: 14.2 |
| 2.Udhaya kumar | BP: 149/96 | HB: 15.4 |
| 3.Abdhul kudhus | BP: 142/108 | HB: 13.6 |
| 4.Fayaz | BP: 120/89 | HB: 11.1 |
| 5.Millar | BP: 131/88 | HB: 15.5 |
|  |  |  |
|  |  |  |

**FOR DRINKERS:**

|  |  |  |
| --- | --- | --- |
| **PATIENT NAME** | **Blood pressure** | **Haemoglobin** |
| 1.Snegithan | BP: 188/112 | HB: 15.6 |
| 2.Soundara rajan | BP: 125/82 | HB: 13.8 |
| 3.Karthik | BP: 134/81 | HB: 11.8 |
| 4.Kadhar basha | BP:129/93 | HB: 16.2 |
| 5.Sathish kumar | BP: 134/100 | HB: 14.7 |

**Discussion:**

Smoking is one of the global problems causing different disease. Smoking cause variation in different parameters of blood among which hemoglobin and blood presure is believed to be increased due to smoking and drinking. Heavy drinkers who want lower blood pressure should slowly reduce how much they drink over one to two weeks. Heavy drinkers who stop suddenly risk developing severe high blood pressure for several days. If you have high blood pressure, avoid alcohol or drink alcohol only in moderation. Very high iron levels can also cause health problems, including liver damage. You can inherit a tendency to absorb more iron than normal from your diet. Alcohol can also affect iron absorption; if you drink large amounts of beer or other alcohol, you may absorb larger than normal amount of iron. Alcohol increases the acid content in your stomach, which can easily irritate the lining and trigger stomach and digestive problems. An empty stomach means more alcohol is moving to the small intestine and getting absorbed by the blood, which can affect other organs like the colon, causing loose stools and diarrhea.

**CONCLUSION:**

To compare the effect of smokers and drinkers blood pressure and haemoglobin levels.