INDIAN DIETETIC ASSOCIATION (IDA)

WORLD HEPATITIS DAY 2020

LIVER DISEASES

HEPATITIS	FATTY LIVER DISEASE & CIRRHOSIS	LIVER CANCER (HEPATOCELLULAR CARCINOMA)	HEMOCHROMATOSIS & WILSON'S DISEASE

WHAT DOES THE LIVER DO?

METABOLIC FUNCTION

Metabolism of Carbohydrates, Protein, Fats, Vitamins & Minerals

EXCRETORY FUNCTION

Excretes cholesterol, bile pigments, heavy metals (like lead, arsenic, bismuth), toxins, bacteria and virus

INACTIVATION OF HORMONES & DRUGS

Liver catabolizes growth hormones, parathormone, cortisol, insulin, glucagon & estrogen. It also inactivates fat soluble drugs (converts into water soluble substances which are excreted through urine or bile)

STORAGE FUNCTIONS

Glycogen, amino acid, iron, folic acid, vitamin A, B_{12} & D

SECRETION OF BILE

Secretes bile (bile salts, bile pigments, cholesterol, fatty acids and lecithin) which helps in digestion & absorption of fats

SYNTHESIS

Glucose by gluconeogenesis, plasma protein and other proteins like clotting factors, hormone binding proteins, steroids, somatomedin & heparin

HEMATOPOIETIC & HAEMOLYTIC FUNCTION

Liver produces blood cells in fetus. It stores Vit B_{12} & iron necessary for erythropoiesis. The senile RBC are destroyed by Kupffer cells of liver after 120 days

DEFENCE & DETOXIFICATION

Kupffer cells of the liver play an important role in the defence of the body. It is also involved in the detoxification of foreign bodies

According to the WHO data (2018), liver disease deaths in India reached 264,193 or 3 % of total deaths. The age adjusted death rate is 23 per 100,000 of population. India ranks # 62 in the world.

WHAT CAUSES LIVER DAMAGE?

DIETARY DEFICIENCIES

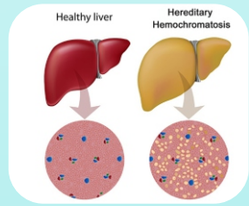
Fatty liver, high proportion of fat in metabolic mixture in starvation, and uncontrolled diabetes

TOXIC AGENTS

Excessive alcohol consumption, drugs like paracetamol, tolbutamide, etc. and industrial chemicals like arsenic, carbon tetra chloride

INFECTIVE AGENTS

Hepatitis A Virus, Hepatitis B Virus, poor personal hygiene

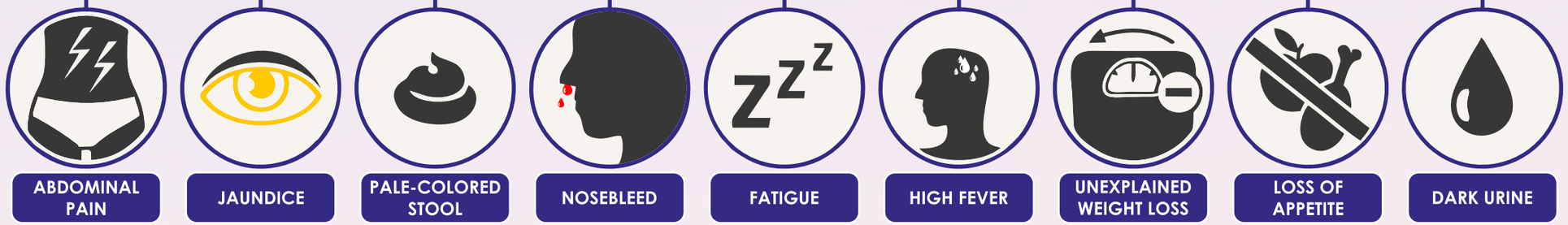


STORAGE DISEASES AND CONGENITAL DISORDERS

Excess stores of iron, copper, galactose, glycogen may accumulate in the liver

https://www.fattyliverfoundation.org https://www.hopkinsmedicine.org https://medilineplus.gov https://liverfoundation.org

HOW DOES YOUR BODY SHOW SIGNS OF LIVER DAMAGE?



NUTRITION ASSESSMENT

Serial monitoring of body weight and anthropometry

Dietary intake

Subjective Global Assessment

Laboratory tests for nutritional deficiencies such as vitamins, magnesium, iron and others

SUBJECTIVE GLOBAL ASSESSMENT (SGA)

HISTORY : changes in dietary intake, gastrointestinal and other symptoms that impair food intake / absorption

FUNCTIONAL CAPACITY : potential stress of disease and / or cachexia. Changes in weight over past 6 months. Trajectory of recent change

PHYSICAL : loss of subcutaneous fat : triceps, chest, trunk

MUSCLE WASTING : deltoids, quadriceps, biceps

EDEMA : ankle, sacral, ascites; clarifies potential cause of weight changes

NUTRITION FOCUSED PHYSICAL EXAMINATION (NFPE)

- **Muscle or grip strength**
  Phase angle (measured by bioelectrical impedance analysis) or handgrip strength allow assessment of mortality risk
- **Appearance and feeling of different body parts, including the arms, legs, chest, back and face**
- **Signs of fluid retention or dehydration***
- **Scalp, hair, mouth, skin and nail health**

**The accurate quantitative measurement of nutritional status is difficult in chronic liver disease patients with fluid overload and / or impaired hepatic protein synthesis*

REFERENCES: 1. Clinical Dietetics Manual, 2nd Edition, Indian Dietetic Association, Elite Publishing House 2. IGNOU – Practical Manual in Clinical Nutrition, 2006 3. Keller et al, 2016 Nutrition Journal 4. Plauth M et al., ESPEN guideline on Clinical nutrition in liver disease, Clinical Nutrition, https://doi.org/10.1016/j.clnu.2018.12.022

FOOD FOR HEALTHY LIVER

- Choose fresh, local and seasonal vegetables and fruits.
- Whole grains preferred to refined and processed cereals .
- Lean meat, poultry without skin and fresh water fish preferred to red meat and organ meats.
- Avoid full fat milk.
- Prefer fish containing omega-3 fatty acids (e.g. salmon, trout and herring).
- Replace saturated fat and trans fats with monounsaturated and polyunsaturated fats.
- Reduce trans fats (baked foods, fried foods) by avoiding foods with partially hydrogenated vegetable oils.
- Avoid excessive use of condiments and spices.
- Avoid or restrict the intake of beverages and foods with added sugars.

CARE FOR YOUR LIVER

- Eat a healthy diet and get regular exercise to keep your weight under control and to prevent Non Alcoholic Fatty Liver Disease (NAFLD). NAFLD often leads to cirrhosis.
- Avoid alcohol. Alcohol damages liver cells and leads to scarring that becomes cirrhosis. Cirrhosis can be deadly.
- Avoid over the counter drugs without prescription.

INTERESTING LIVER FACTS

- **Liver, a complex chemical factory of the body works 24 hours a day. It weighs a little over one kilogram.**
- **It is the largest gland in the body and does the most complex functions. The liver with at least 25% of the healthy liver cells can regenerate itself and can become whole again.**
- **A healthy liver contains 300 billion specialized cells and filters about 1.7 litres of blood every minute.**
- **A healthy liver can produce as much as one litre of bile every day.**
- **The liver increases in size and weight during pregnancy. This is to accommodate the changing metabolic demands and hormonal balance of the mother.**
- **The first successful whole human liver transplant occurred in 1967, after a first attempt in 1963. Later, in 1989, a portion of a living adult's liver was transplanted into a child, and the results showed that both donor and recipient had normal liver function. Since that time, adult-to-adult living donations have occurred with a portion of the donor's liver replacing the entire liver of the recipient. Over the time, both the livers grow into complete organs. This procedure though amazing carries some risks.**
- **Alcohol consumption and cigarette smoking are equally bad for liver health.**

References: 1. Krause's Food and the Nutrition Care Process, L. Kathleen Mahan and Janice L. Raymond, 14th Edition, Elsevier
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