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**Admission No.  AIPMS/170/2018**

**RE: DIPLOMA IN HUMAN NUTRITION**

**FOOD AND NUTRITION FINAL ASSIGNMENTS**

1. Imagine you have identiﬁed people in your community who are suffering from vitamin A deﬁciency, iodine deﬁciency disorder and iron deﬁciency anaemia. What can you do to address these problems?

* Create awareness in the community for health seeking behavior.
* Provision of folic acid by health workers to pregnant women for prevention of iron deficiency
* Children suffering from anemia their parents or caregiver should be encouraged taking them to health facility for medical attention.
* Community should be encouraged to use Iodize table salts to reduce the risk of getting goiter.
* Above all, dietary eating is important for healthy growth and body functions. Nutrients found in all foods and drinks provide nourishment for the body such as Materials which provide energy according to Schaffer C. Effects of malnutrition on the body. Merck manual online library. 2011.

1. What is the impact of malnutrition on communities?

**Impact of malnutrition**

1. High death rate: among children less than 5 years and the elderly who has no accessibility to Nutrition service or left un attended to while malnourished

1. Less income generation: due to much attention is given to the sick by the family members who suppose to provide the basic need to family now for that case spend much of their time attending to the sick/ malnourished child instead of going for work.
2. Growth failure among vulnerable group resulting to wasting and stunting: malnutrition affects the brain and caused retarded growth in children therefore, children in this categories are always dull and they perform poorly in school.
3. Risk of getting infections: malnutrition weakened the immune system of malnourished children and exposes them to other diseases like malaria and diarrhea.
4. Little or no development: a sick community is a hungry nation since its lacks manpower to do work.

How can you help prevent some of the negative effects of malnutrition?

* Intensify farming mechanism to generate more food production, according to Plato’s The Republic (4th Century B.C.) states that a society grows around its food production and consumption. This statement is relayed by Malinowski in his functional approach to anthropology that links biology to culture (Malinowski, 1968).
* Strengthen the health institutions for provision of quality medical care this will help to fight malnutrition and reduce the death cause by malnutrition.
* embrace peaceful co-existence in areas with conflict to give time for agriculture Military organization, the industrial revolution and its management, the emergence of the welfare State, as well as the crises of recent decades and the importance of excess pathologies, have given rise to thoughts on minimum requirements in nutritional elements
* Household food security (access and availability) promote the assembly of specialized production activities other than agriculture (e.g. commercial, administrative, political and military), which indirectly promoted the securing of food. (Malinowski, 1968).

1. Describe and explain the digestion and absorption of carbohydrates

**Digestion of carbohydrate**

The two digestible carbohydrate are starches and sugars and both of these carbohydrate are digested, or broken down into their most elementary form, a long the gastrointestinal tract.

Amylase, an enzyme which breaks a part starches, is found in the mounth and in the small intestine. Similarly the three major enzyme which break a part sugars , - sucrose, maltase and lactose – are also found in the small intestine once these digested starches and sugars begins to more through the small intestine, they are able to be absorbed.

**Absorption of carbohydrate**

Once carbohydrates are broken down into their simplest forms, they are quickly absorbed along the upper and lower parts of the small intestine. Small figures, then they are transferred to the blood stream and carried to muscles and the liver.

**Elimination of carbohydrate**

When carbohydrate are not full digested or absorbed, they are eliminated from the body. Dietary fiber is one of the carbohydrates which Human cannot digest, thus dietary fiber is the most commonly excreted types of carbohydrate. In addition, lactose type of sugar, Can also be excreted if an individual lacks the proper enzymes to digest this carbohydrate. All undigested carbohydrate move from the small intestine, where absorption would normally occur to the large intestine and the colon where elimination finally occurs.

Reference mckinley Health Centre, macronutrients: the important of carbohydrate, proteins and fat.

US Department of Agriculture, National Agricultural library Dietary intakes, carbohydrates.

1. What is nutrition?

Nutrition is the science that interprets the interaction of nutrients and other substances in food in relation to maintenance, growth, reproduction, health and disease of an organism. It includes food intake, absorption, assimilation, biosynthesis, catabolism and excretion. According to US National Library of Medicine, Joint Collection Development Policy; Human Nutrition and Food Accessed, on April 04, 2017.

List the main functions of nutrients.

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| **Types of Nutrients** | **Their functions** | **Examples** |
| 1. carbohydrates | * Carbohydrates supply most of energy in the body | Whole grains, Fruits and vegetables  Complex carbohydrates  ( starch) |
| 1. fat(Lipids) | * They play a role in metabolic and structure of the body. It also provides energy in the body. * Body’s storage form for food energy eaten in excess of need * Insulates the body * Cushions vital body organs * Transports fat soluble vitamins(A,D,E,K ) | Meat, poultry, fish, milk cheese, and eggs |
| 1. Proteins | * Proteins is a body Building and repair body tissues. It is very vital part of every cell – muscle, Bone, Blood, and organs. * Regulate the body processes- enzymes, hormones, and antibodies | Complete proteins are: meat, poultry, fish, milk, cheese, and eggs  Incomplete proteins include: wheat bread and peanut butter, legumes and seeds, and legumes and grains |
| 1. Vitamins | * It regulates the body physiological processes * They work with enzymes by triggering specific chemical reactions that allow the digestion, absorption, metabolism and use of other nutrients. | Water soluble vitamins are ( A and B complex)  Fat soluble vitamins are (A, D, E, and K) |
| 1. Minerals | * It regulate body process and coagulation of blood and muscles contractions * Some of the functions; muscular contractions, nerve irritability, water balance, acids base equilibrium, and metabolism | Example is Sodium (salt) |
| 1. Water | * Water is a vehicle of solvent * It regulates body processes * Water is the element of temperature regulation |  |

1. What is the importance of calcium?

Calcium is very essential in muscles contraction, ocyte activation, building strong bones and teeth ,blood clotting , nerve impulse, transmission, regulating heart beat and fluid balance within the cells. Calcium is the most abundant minerals in the Human body being an integral component of bones and teeth phosphates and its presence in the human diets favor integrity of the skeletal muscles preventing osteoporosis. It also controls nerve excitability, tone and contractility of heart ( Piste et., 2013) and tend to lower both systolic and diastolic blood pressure( cappucio et al. , 1995)

Name and explain the two factors that enhance and that interfere with the absorption of iron in the body.

1. Calcium – (like Iron) is essential minerals, which means the body get this nutrients from diet. Calcium is found in food such as milk, yoghurt, cheese, salmon, almonds figs greens and rhubarb and is the only known substance to inhibit absorption of both non- heme and Heme Iron.
2. Eggs- contain a compound that impairs absorption of Iron. Phosphoprotein called phosvitin is a protein that may responsible for the low bioavailability of iron from eggs. This iron inhibiting characteristic of eggs is the “eggs factor”
3. Oxalates- impair the absorption of non Heme Iron. Oxalates are compound irons derived from oxalic acid and found in food such as spinach, kale, beets, nuts and herbs such as oregano. The presence of oxalates in the spinach explain why the iron is in spinach is not absorbed
4. . Discuss two reasons why it is essential to include carbohydrates in your diet.
5. Energy – carbohydrates should be the body’s main source of energy in a healthy, balanced diet, providing about 4kcal per gram. They are broken down into glucose (sugars) before being absorbed in the blood stream. Glucose is used by your body for energy, fuelling all of your activities weather going for a run or simply breathing.
6. Fruits and vegetables, pulses wholegrain and whole-wheat varieties of starches foods and potatoes eaten with their skins on, are good sources of fiber. Fiber is an important part of healthy, balanced diets. It can promote good bowel healthy, reduces the risks of constipation and some forms of fiber have been shown to reduce cholesterol level

Why is it necessary for the body to spare protein?

Because adequate dietary carbohydrate eliminate the need to used amino acids from proteins to make glucose. Carbohydrate are said to spare proteins because your body uses carbohydrate for energy instead of proteins according to Richard Stochton College Atheistic Training. As results, your body uses proteins for other purposes such as rebuilding muscles, making enzyme or producing antibodies

1. Discuss the role of lipids in our diet and their critical functions in the body.
2. Energy production and storage -The primary role of lipids in our body is to provide energy for muscles and body processes. Fat is energy dense if you consume more calories than you need in a day, the excess energy is stored as lipids in a adipose cells.
3. Insulation and Protection - Lipid are also use to insulates and protect your body. You have a layer of fat just below your skin that helps to keep to your internal body temperature regular despite the external temperature.
4. Digestion and Absorption – lipid in your body are essential for proper digestion and absorption of food and nutrients, Bile acids produced from lipids in your liver allow fat and water to mix in your intestines and aid in the breakdown and absorption of food.
5. Cell wall structure – the essential lipids linolenic acid and Linoleic acid are vital to your health; they cannot be in your body and must come from your diet. They are use in the production of cell membranes and hormones, as well for maintaining vision and supporting the immune system.

Refrence

* Contemporary Nutrition issues and Insights: Gordon M. Wardlaw
* Advanced Nutrition and Human metabolism saree S. Gropper, Jack L. Smith amd James L.Groh

1. Explain the importance of fats to the bioavailability of other nutrients.

This is important because you are not going to absorb everything that you will eat.  There are lots of factors that will contribute to what ingredients and what doses actually get utilized in their active form by your body.   Take carrots for instance.  We've all heard that carrots are good for our eyes and that is because carrots contain vitamin A in the form of beta carotene.  Beta carotene is the pigment that makes carrots orange. When you eat raw carrots you absorb a very small percentage of beta carotene, but when you cook the carrot and add a little bit of fat, like butter for instance, the percentage of beta carotene that your body absorbs goes way up.

1. Discuss the role of fats as an energy source for the body.

Fats typically provide more than half of the body's energy needs. Fat from food is broken down into fatty acids, which can travel in the blood and be captured by hungry cells. Fatty acids that aren't needed right away are packaged in bundles called triglycerides and stored in fat cells, which have unlimited capacity. "We are really good at storing fat," says Judith Wylie-Rosett, EdD, RD, a professor of behavioral and nutritional research at Albert Einstein College of Medicine.

1. Define chylomicron.

A small fat globule composed of protein and lipid (fat). Chylomicrons are found in the blood and lymphatic fluid where they serve to transport fat from its port of entry in the intestine to the liver and to adipose (fat) tissue. After a fatty meal, the blood is so full of chylomicrons that it looks milky.

Describe the role of bile salts in the digestion of triacylglycerols and phospholipids.

* **Emulsification of lipid aggregates:** Bile acids have detergent action on particles of dietary fat which causes fat globules to break down or be emulsified into minute, microscopic droplets. Emulsification is not digestion per se, but is of importance because it greatly increases the surface area of fat, making it available for digestion by lipases, which cannot access the inside of lipid droplets.
* **Solubilization and transport of lipids in an aqueous environment:** Bile acids are lipid carriers and are able to solubilize many lipids by forming **micelles** - aggregates of lipids such as fatty acids, cholesterol and monoglycerides - that remain suspended in water. Bile acids are also critical for transport and absorption of the fat- soluble vitamins Hepatic synthesis of bile acids accounts for the majority of cholesterol breakdown in the body. In humans, roughly 500 mg of cholesterol are converted to bile acids and eliminated in bile every day. This route for elimination of excess cholesterol is probably important in all animals