DEPOLOMA IN HUMAN NUTRITION

BENJAMIN AWURA SUFU

AFRICAN INSTITUTE FOR PROJECT MANAGEMENT STUDIES

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

Answers

Vitamin A deficiency, iodine deficiency, and iron deficiency anemia are major health problem worldwide, but it can be managed and prevented as seen below, to begin with;

1. Vitamin A, as much we take care of our diets and health, other issues do emerge. Partly this is due to environmental factors like loss of nutrients in food due to lack of adequate knowledge about food nutrient , overcooking etc. and also it is because we do not add a wide variety of food items to our diets. If we are particularly fussy, there are bound of being deficiencies in the body. One such condition is deficiencies of Vitamin A. Developed countries rarely face the challenges of rampant Vitamin A deficiency; it is only the poorer nations of the world that suffer from it.

When diet does not have proper doses of vitamin A it creates a deficiency. It is a condition that mostly affecting children, many kids develop this after an attack of measles. Vitamin A is fat-soluble and is made up of components known as ‘Retinoid’. There are three forms of this vitamin- retinol, beta-carotene, and carotenoids.

Retinol is the most accessible form and it can be obtained from animal sources. The pigment responsible for adjusting to low light does not get manufactured in the body in the face of Vitamin A deficiency. This is why people start suffering from night blindness. Vitamin A is vital for vision, bone health, immune response, reproduction, skin, and hair health, and to maintain good health of respiratory, urinary and digestive systems. It helps in proper fetal growth and is essential for genetic expression.

Therefore, the following have to be implemented for vitamin A deficiency management.

* Every child that reaches the age of 6 months should be given vitamin A drop of 100,000 IU and dose of measles vaccine; this will prevent the children from getting vitamin A deficiency, since the immunity of the child already been busted against disease attack.
* Animal products are rich in this vitamin A for example. Milk , butter, eggs, meat and specifically liver have abundant Vitamin A. Eat these regularly for preventing deficiency of vitamin A
* Oral and inject able supplements can be taken to treat Vitamin A deficiency among those who are exposed to vitamin A deficiency.
* For any child hospitalize with case of severe pneumonia, asthma, measles attack must be given vitamin A according to their ages.
* Vegetarians should eat pigmented vegetables that include the leafy green, orange and yellow vegetables. Also, having milk takes care of a certain percentage of the daily requirement.
* Children must be vaccinated against measles at age of 9 months to enable them resist measles attack which lead to vitamin A deficiency, by doing so the problem can be handle easily.
* Adding oil, ghee, butter or even margarine will prove beneficial, because they are rich in vitamin A

All above are ways to follow in addressing problem of vitamin A deficiency by adding oil, animal product and plant product which contain a lot of vitamin A and through health education to the communities about prevention of vitamin A deficiency.

1. Iodine deficiency is a lack of iodine in the body. Iodine is sparsely distributed in the earth's surface. As a result, iodine deficiency disorders (IDDs) have been exceedingly common in most populations (Hetzel, 1989b; Hetzel and Pandav, 1996; Mannar, 1996). These disorders were highly prevalent in the United States prior to the introduction of iodine through iodized salt.

WHO has estimated that over 1.5 billion persons worldwide reside in regions of environmental iodine deficiency (ID) and are at risk of IDDs? With this iodine deficiency issues can be address as follow;

* Fortification of salt with iodine has a unique advantage among the micronutrient supplements it requires no change in dietary habits, because everyone uses salt, this can easily address the problem iodine deficiency.
* Iodinated bread, since bread is at demand, it can be used as mode of supplying iodine among communities which enable the preventive packaged of iodine easily accessible, hence iodine deficiency can be addressed amicably.
* Iodinated water, water has been successfully used as a mode of transport for the prevention of IDDs. A silastic cylinder containing iodine has been used in bore holes in several African countries to achieve some success in raising community iodine intake, but the many associated difficulties have prevented its widespread use (Fisch et al., 1993). In selected rural regions of Thailand and Indonesia, iodine is added intermittently to cisterns that store water for drinking and cooking (Suwanik et al).
* Drops and tablet of iodine the original study that proved iodine prevents goiter used sodium iodide, which was given to schoolchildren twice yearly (Marine and Kimball, 1921). Drops of Lugol's solution have also been used in schoolrooms. Tablets of salts of iodine, sometimes disguised with chocolate, have been dispensed intermittently. Recently there has been renewed interest in intermittent dosage in classrooms using tablets or drops containing iodine.
* Iodinated oil, Iodinated poppy seed oil has been successfully used in the prevention of IDDs since its introduction in the late 1950s in New Guinea (Fierro-Benitez et al., 1969; Hetzel et al., 1980); even other unsaturated oils have also been used. Needs may be met for a year or more by a single dose, depending on its size and route of administration. These mixtures have been used both intramuscularly and orally in doses varying from .2 ml to several ml, most programs have used either 1 or 2 ml in older children and adults, but success has been achieved with smaller doses.

The use of iodinated oil, iodinated water, iodinated bread, and tablets and drops are all reserved for special consideration until IDDs are eliminated as a health problem, the alternative methods, iodinated oil has proved to be the most successful, but it requires a skilled health worker, availability of disposable syringes and needles, and carries an attendant risk of infection. Nevertheless, iodinated oil has a well-defined role in the international campaign against IDDs.

1. Iron deficiency disorder is one of the health problems due to lack of mineral iron in the body, and can cause iron deficiency anemia. So the following can be use to address the issue;

* Iron tablet can help restore iron levels in your body, you should take iron tablet on an empty stomach to facilitate quick absorption, and take it several times (1 tablet every day for 6 months) for lactating mothers, and children >6 months ½ tablet
* Diets, some of the food can help to treat or prevent iron deficiency since it contains iron, for example red meat, dark green leafy vegetables, eggs, pumpkin and squash seed, dried fruits. Additional vitamin C helps your body absorb iron.
* Treating the underline causes of bleeding, if noticed that the actual cause of the iron deficiency was due to bleeding, doctor will prescribe oral contraceptive to women who too have heavy period. This can reduce the amount of menstrual bleeding each month.
* Malaria treatment and prevention for the child and women of child bearing age, malaria parasites normal feeds on red blood cells as their food for breeding which cause more heamolysis leading to anemia. Proper treatment and sleeping under mosquito net protects one from iron deficiency anemia.

Iron deficiency anemia is a common condition among infants and women of child bearing age due to high demand of it for the developing fetus and growth, but easily to prevent and treat if identified early, so doctor can to advise if taking iron tablet it should be along with vitamin c tablet or fruit especially orange at least a glass to fasten its absorption.

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1. What is the impact of malnutrition on communities? How can you help prevent some of the negative effects of malnutrition?

Answers

Malnutrition is condition that occur as result of bad feeding, that is to say low intake of food nutrient or over intake of food nutrient and it have the following impact on communities as seen below;

1. Muscles and Bones

Your body naturally loses muscle and bone as you age; however, malnutrition can speed these losses and impact your independence and ability to be active.

1. Mobility**:** Weak muscles and bones can make it harder for individual to do everyday tasks like walking, dressing, and bathing. Regular physical activity and a diet high in protein, calcium, and vitamin D are critical to help you maintain and rebuild muscle and bone. But since it had not been well
2. Strength**:** Poor muscle strength may make it more difficult to do your favorite activities.
3. Falls: Bone and joint problems are major risk factors for the leading cause of death and injury among older adults since it is the work of muscles and bones to support activities when it’s well nourished,
4. Posture: Muscles and bones are needed to help keep you upright. If they are weak, you may strain your neck, back, and shoulder muscles, causing you to feel pain, as result of that, many people complain of arthritis due to impact of malnutrition on the muscles and bones.
5. Immune System and Healing

When your body lacks nutrition, your white blood cell count can decrease, making it harder for your body to heal and fight illnesses.

1. Healing: Your body’s nutrition influences your recovery from any forms of illness, since wounds need energy, protein, vitamins, and minerals to heal and, a poor immune system can increase your risk for illnesses and infections, even malnourished person cannot tolerate chemotherapy.
2. Organs

Not having enough protein and other nutrients can harm your organs.

1. Eyes: loss of vision due lack of vitamin A and mineral deficiencies can accelerate vision loss caused by glaucoma, cataracts, and/or macular degeneration.
2. Brain: Nutrient deficiencies may speed up the rate at which your brain loses neurons, which can impair your speech, coordination, and memory as result, some of the children are dull in the class even adult due to malnutrition.
3. Kidneys: A deficiency of fluids and electrolytes can cause your kidneys to overwork and affect their ability to function. This can lead to dehydration, joint pain, and heart issues.
4. Mortality rate, since malnutrition is one of the public health issue it has clam several lives estimated 10 million children die of malnutrition worldwide, as impact of malnutrition,

Therefore, as seen above impact of malnutrition on the communities from muscles, bones, brain, eyes, and impaired immunity system are all as result of negative impact of malnutrition. With these still, its negative impacts can be prevented as follow;

* Make smart food choices. Learn how to make a well-balanced plate, identify foods highest in key nutrients like protein, carbohydrates, vitamin and more, so that the body will be well nourished. This will enable communities to prevent negative impact of malnutrition.
* Setting up of targeted supplementary feeding program (TSFP) in all the health facilities, this will aim to treat cases of moderate acute malnutrition among children 6-59 months, pregnant and lactating mothers of children less than 6 month and old age 60 years above. Since this program’s supplies are rich with nutrients like ready to use supplementary food (RUSF), soya cereal and bland (CSB++).
* Setting up of outpatient therapeutic program (OTP) this aims at managing severe acute malnutrition at community level only targeting children who are severely malnourished by use of ready to use therapeutic food (RUTF) which is rich in nutrients and its effective in treating malnutrition, hence to can prevent malnutrition prevalence.
* Proposal writing to implement blanket supplementary feeding in are where its global acute malnutrition (GAM) rate is high above UN threshold as an emergence to prevent children and even adult from becoming malnourished.

Negative impacts of malnutrition can be treated and prevented when you such programs like TSFP, OTP and BSFP running the communities, will enable us to manage its impact among our communities and even making smart food choices.

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1. Describe and explain the digestion and absorption of carbohydrates

Answers

Carbohydrates are one of the four major classes of nutrients and play several important roles in all forms of life, including:

* Structural components of cell walls in plants and of the exoskeleton of arthropods
* Sources of metabolic fuels and energy stores
* Parts of RNA and DNA in which ribose and deoxyribose, respectively, are linked by N glycosidic bonds to purine and pyrimidine bases
* Integral features of many proteins and lipids (glycoproteins and glycolipids), especially in cell membranes where they are essential for cell–cell recognition and molecular targeting.

Carbohydrates are very diverse molecules that can be classified by their molecular size (degree of polymerization Or DP) into sugars (DP 1–2), oligosaccharides (DP 3–9), and polysaccharides (DP > 9). The physicochemical properties of carbohydrates and their fates within the body are also influenced by their monosaccharide composition and the type of linkage between sugar residues.

Therefore, carbohydrate digestion and are as follow;

1. Mouth, this where the digestion of carbohydrate starts from, by the help of salivary gland to secret amylase to hydrolyze it and to pass it through the process call peristalsis to the stomach then small intestine,
2. Small intestine, by the acinar cells of the pancreas is the endoglycosidase α-amylase, which hydrolyzes internal α-1, 4-linkages in amylose and amylopectin molecules to yield maltotriose, maltose and dextrins. These oligosaccharides, together with the food disaccharides, sucrose and lactose, are digested by specific oligosaccharidases expressed on the apical membrane of the epithelial cells that populate the small intestinal villi. Sucrase–isomaltase is a glycoprotein anchored via its amino-terminal domain in the apical membrane that hydrolyzes all of the sucrose and most of the maltose and isomaltose, and the resulting monomeric sugars are then available for transport into the enterocytes.
3. Absorption of carbohydrate is within the small intestine. Glucose and galactose are transported across the apical membrane by the sodium–glucose transport protein-1 (SGLT1), a process that is powered by Na+/K+-ATPase on the basolateral membrane; in contrast, fructose is absorbed by facilitated transport via the membrane-spanning GLUT5 protein. A member of the same family of transporter proteins, GLUT2, is the facilitated transporter on the basolateral membrane which shuttles all three monosaccharide’s from the enterocyte towards the blood vessels linking with the portal vein for delivery to the liver, and be supply to the body for its normal function,

Carbohydrates are the single most abundant and economic sources of food energy in the human diet, constituting 40–80% of total energy intake in different populations.

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1. What is nutrition? List the main functions of nutrients.

Answers

Nutrition is the process where food is ingested and digests as the nutrient is taken up by the body for its normal function, development and growth. So the main functions of nutrients are as follow;

* It provides body with energy, carbohydrates.
* It also repairs and builds body tissues, for example protein
* Regulates body process, this is possible by vitamins, minerals and water
* Provides protection to the body organs, that is to say fats.

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Human nutrition module one pdf page 4 and 5

1. What is the importance of calcium? Name and explain the two factors that enhance and that interfere with the absorption of iron in the body.

Answers

Calcium cannot be produced by the body and is therefore considered an ‘essential’ nutrient that must be provided by the foods we eat and it is the most abundant mineral in the body. Almost all of the calcium in the body is found in the skeleton - more than 98% in fact, and it’s important in the following ways;

* Calcium is important in the building and maintenance of teeth’ and it plays a key role in our cells which involved in many processes, such as in the contraction of our muscles and in the transmission of signals in nerves and release of hormones for body function.
* During childhood and adolescence, calcium is used to build and develop the skeleton and teeth. A calcium-rich diet is vital during this growth stage.
* As an adult, it is important to continue with a calcium-rich diet to maintain your bone strength. With age, calcium is lost from the bones. So eating 3 serves of calcium-rich food each day can help to keep your bones strong. One serve of calcium-rich food provides around 300mg calcium.
* In pregnant, their calcium needs to increase from 800mg a day to 1100mg a day. That’s extra 300mg calcium a day (equivalent to 1 serve of a calcium-rich food). Pregnant women need to eat around 4 serves of calcium-rich foods every day to meet their needs.

The two factors that enhance and interferes iron absorption are these;

1. Factors enhancing iron absorption are those soluble substances which can easily bind to iron heme and none heme iron .This means that iron absorption is regulated by dietary and systemic factors. Dietary iron is largely non-heme iron with about 5%–10% in the form of heme iron in diets containing meat. Even though heme iron constitutes a smaller part of dietary iron, it is highly bioavailable and 20%–30% of heme iron is absorbed, example of the component are;

* Ascorbic acid
* Meat, fish and sea foods
* Certain organic acids (citric, lactic, malic, tartaric)

1. Factors inhibiting iron absorption are those insoluble substances that cannot mix with iron, none heme or heme iron for example;

* Presence of anti-nutrients, phytates  and tannin in cereal based food products
* Iron binding phenolic compounds in tea, coffee, red wine,
* some leafy vegetables, herbs, nuts and legumes
* Calcium
* Soy protein

Vitamin C is one of the most effective enhancer of non-heme iron absorption. Other dietary factors such as citric acid and other organic acids, alcohol and carotenes similarly enhance non-heme iron absorption. Furthermore, animal based proteins such as meat, fish, and poultry, enhance iron absorption. On the other hand Calcium inhibits the absorption of both heme and nonheme iron in a comparable way and thus, it is likely that this inhibition by calcium occurs after the heme iron is freed from the porphyrin ring. Calcium has been shown to inhibit iron absorption in both rats and even during digestion, the phytate molecule can be negatively charged, indicating a potential for binding positively charged metal ions like iron. The negative implication of phytate in bran on iron absorption was first demonstrated by Sharpe et al. (1950), using white bread and brown bran bread. This effect was earlier supposed to be because of its high content of phytate which has been demonstrated in a number of more recent studies.

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1. . Discuss two reasons why it is essential to include carbohydrates in your diet. Why is it necessary for the body to spare protein?

Answers

Carbohydrate is one of the six essential nutrient and most nutritionists agree that 55 to 65%of our diet should be carbohydrates. So for that reason why we need carbohydrates for;

* Primary source of energy, carbohydrate is easiest food to break down and uses for energy, due to its compositions of sugars, starches, gums and cellulose which are highly rich in providing energy after their metabolism in human.
* Fibers, some of the glucose units are linked together to form fiber. Fiber is the tough, stringy part of grains, vegetables and fruits which humans cannot digest. You need about 25 grams of fiber each day each meal choose one or two servings of food high in fiber, because;
* It helps to move waste through your digestive system by making your stools soft and bulky. This is possible due to presence ofInsoluble fiberwhich is found in the cell walls of most grains, vegetables, and fruits.
* It also binds with cholesterol and carries it out of the body in the stools to help prevent heart disease. This is normal obtained from soluble fibers, present in certain grains, fruits, and in most vegetables and legumes, such as beans and peas

Therefore, it’s important to include carbohydrate in our diet because it provides energy to the vital organs like brain and muscles for physical activities and provides fibers to accelerate digestion of the food consumed.

On the other hand protein sparing is the process by which the body derives energy from sources other than protein, such as carbohydrates, fat tissues and dietary fats. And it’s necessary to spare because;

* Protein-sparing diet is to provide enough carbohydrates and fats to avoid converting protein into energy.
* It also ensures that your body has all it needs to fill protein's other life-supporting roles, from building and repairing tissues and muscles to making antibodies and enzymes. It's important to eat the protein you need every day and prevent it from being used for energy because your body doesn't store it like carbohydrates and fats.

As you create a diet that balances macronutrients, plan on filling 10 to 35 percent of your daily calories with protein. If your protein does not exceed 35 percent of your calories, then the rest of your diet should supply enough fats and carbohydrate to support the protein-sparing effect. Poultry, meat, fish and soybeans have 20 to 25 grams of protein in a 3-ounce serving. Beans are the next best source, with each cup supplying about 15 grams of protein. One cup of cooked quinoa has 8 grams of protein, while you'll get roughly 6 grams from 1 cup of cooked oatmeal, low-fat milk or yogurt and 1 ounce of cheese.

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Human nutrition note module 3 pdf chapter 3 page 89

1. Discuss the role of lipids in our diet and their critical functions in the body.

Answers

Lipids are the constituents of fats; both animal and vegetable which are mainly compose of fat acids, and plays the following roles;

1. It helps in metabolic and structural balance of the body, that is cell membrane of organs and tissues, the nervous system.
2. It transports lipid soluble vitamins, such as vitamin A, D, E and K.
3. It also constituents’ important energy stores, in form of adipose tissues.
4. It enable food easily to be chewed and swallow, due to its form of been insoluble nature.

Lipids are important in our diet because it helps to transport lipid soluble vitamins, adding flavor to food, storages of energy in adipose tissues and many others, as they too have the function in the body like;

* Acting as cushion to the vital organs, like brain, kidneys.
* Energy storage of the body
* Furnishing skin structure from breaking easily, and

Lipids help our body to be smooth, prevents friction between joint bones, energy storage and cushion to the vital organs.

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Nutritional note 2(1), pp 5

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

Answer

Fats are one of the six essential nutrient which is important to the body for its function while,

Bioavailability is the efficiency with which a dietary component is used systematically through normal metabolic pathways.It is expressed as a percentage of intakes and is known to be influenced by dietary andhost factors. Therefore, fats have the following important to bioavailability of other nutrients;

1. Fats contain about 9calories per gram twice as many carbohydrates or protein, this means that at least our diet to have compositions of fats, due to its evidence of containing more calories than other nutrients.
2. It carry fat soluble vitamins (A, D, E, K) into the body and help in the absorption of these vitamins, which is perform by fats other than other nutrients.
3. Since fats digestion starts from mouth so it adds more flavors to the food and help satisfy hunger.
4. Help to maintain body temperature. The layer of fat under the skin helps to conserve body heat, especially during coldness and in hot weather after sweating fresh air you will begin to experience as important part of fats to other nutrients.
5. It also provide cushion to the vital organs after digestion, even if it is not got from food body can manufacture on its own in form of cholesterol, then deposit to the areas of function,

Fats are the concentrated source of energy in our diet. 1 gm of fat gives 9 kcal of energy. Fats are made up of small units called fatty acids; the nature of fats is dependent on the type of fatty acids present. Fatty acids may be saturated or unsaturated. Saturated fatty acids are found in solid fats, these are what made its important to the bioavailability to other nutrients.

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

Answers

Fats are one of the three macronutrients, along with carbohydrates and protein. Fat is an important foodstuff for many forms of life and fats serve both structural and metabolic functions, and plays the following roles;

* Every gram of dietary fats is slow in digestion but supplies the body with about 9 calories. To put things in perspective, protein and carbohydrates both supply 4 calories per gram. Therefore, fats energy supplies double of carbohydrates and protein,
* In the small intestine, fats are broken down into fatty acids and glycerol. These fatty acid chains are converted into energy via a process called beta-oxidation.
* Fats have higher storage than other two macronutrients, because it can easily be deposits in the abdomen, under the skin, and even in blood vessels and organs. Fat itself does not cause weight gain, but consuming more energy (in calories) than your body requires does. This is why the excess stored under skin in the abdomen can be converted into energy after been engaged in heavy physical work.

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Principle of human nutrition page 178-193

1. Define chylomicron? Describe the role of bile salts in the digestion of triacylglycerols and phospholipids.

Answers

Chlomicrons is small fat globules compose of protein and lipid and its bound in the blood and lymphatic fluid where they serve to transport fats from its port of entry in the intestine to the liver and adipose tissue.

1. Bile is a dark green to yellowish brown fluid, produced by the [liver](https://en.wikipedia.org/wiki/Liver) of most vertebrates, which aids the [digestion](https://en.wikipedia.org/wiki/Digestion) of [lipids](https://en.wikipedia.org/wiki/Lipid) in the [small intestine](https://en.wikipedia.org/wiki/Small_intestine). In humans, bile is produced continuously by the liver (liver bile), and stored and concentrated in the [gallbladder](https://en.wikipedia.org/wiki/Gallbladder). After eating, this stored bile is discharged into the [duodenum](https://en.wikipedia.org/wiki/Duodenum), the composition of hepatic bile is 97% water, 0.7% [bile salts](https://en.wikipedia.org/wiki/Bile_acid), 0.2% [bilirubin](https://en.wikipedia.org/wiki/Bilirubin), 0.51% fats (cholesterol, fatty acids, and [lecithin](https://en.wikipedia.org/wiki/Lecithin)), and 200 meq/l inorganic salts. So bile salt plays the following role in the digestion of triacylglycerols and phospholipids;

* It helps to [emulsify](https://en.wikipedia.org/wiki/Emulsification) the lipids in food. Bile salt [anions](https://en.wikipedia.org/wiki/Anion) are [hydrophilic](https://en.wikipedia.org/wiki/Hydrophilic) on one side and [hydrophobic](https://en.wikipedia.org/wiki/Hydrophobic) on the other side; consequently, they tend to aggregate around droplets of lipids ([triglycerides](https://en.wikipedia.org/wiki/Triglycerides) and [phospholipids](https://en.wikipedia.org/wiki/Phospholipid)) to form [micelles](https://en.wikipedia.org/wiki/Micelle), with the hydrophobic sides towards the fats and hydrophilic sides facing outwards. The hydrophilic sides are negatively charged, and this charge prevents fat droplets coated with bile from re-aggregating into larger fat particles. Ordinarily, the micelles in the duodenum have a diameter around14–33 μm.
* The dispersion of food fat into micelles provides a greatly increased surface area for the action of the enzyme [pancreatic lipase](https://en.wikipedia.org/wiki/Pancreatic_lipase), which actually digests the triglycerides, and is able to reach the fatty core through gaps between the bile salts. A triglyceride is broken down into two fatty acids and a [monoglyceride](https://en.wikipedia.org/wiki/Monoglyceride), which are absorbed by the [villi](https://en.wikipedia.org/wiki/Intestinal_villus) on the intestine walls. After being transferred across the intestinal membrane, the fatty acids reform into triglycerides re**-**esterifies, before being absorbed into the lymphatic system through [lacteals](https://en.wikipedia.org/wiki/Lacteal). Without bile salts, most of the lipids in food would be excreted in feces, undigested.
* Since bile increases the absorption of fats, it is an important part of the absorption of the fat-soluble substances, such as the [vitamins](https://en.wikipedia.org/wiki/Vitamin) [A](https://en.wikipedia.org/wiki/Vitamin_A), [D](https://en.wikipedia.org/wiki/Vitamin_D), [E](https://en.wikipedia.org/wiki/Vitamin_E), and [K](https://en.wikipedia.org/wiki/Vitamin_K).
* Besides its digestive function, bile serves also as the route of excretion for bilirubin, a byproduct of [red blood cells](https://en.wikipedia.org/wiki/Erythrocyte) recycled by the liver. Bilirubin derives from [hemoglobin](https://en.wikipedia.org/wiki/Hemoglobin) by [glucuronidation](https://en.wikipedia.org/wiki/Glucuronidation).

Through by the help of bile salt those lipids get to be emulsified for absorption, without it tracylglycerol and phospholipid would have been undigested.

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*Human nutrition module 2 note pdf, Bile salt page 47-52*

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