ASSIGNMENT 3

**Registration number: Aipms 274/2019**

1. Discuss the relationship between nutritional status and immunity

The immune system is the system by which the body protects itself against disease or infection. Different nutrients are needed to strengthen the immune system. The following nutrients are important in strengthening the immune system.

Nutrients that support immune function-zinc, vitamin C, protein, vitamin A, vitamin B6 and folate.

Nutrients that provide antioxidant protection-vitamin C, carotenoids, vitamin E, selenium

Nutrients that support synthesis of enzymes - amino acids, vitamin B6, fatty acids, selenium

Nutrients that are involved in tissue synthesis-protein, energy, zinc, vitamin A, vitamin C, iron

On the other hand poor nutritional status weakens the immune system making the person more susceptible to infections. The following is true;

Malnutrition weakens immune system

Insufficient protein intake decreases the body’s defensive mechanisms require d for synthesis of proteins

Total amount and type of fat in the diet negatively affects immune system

Energy is needed for all the processes

1. Using illustrations, show describe the malnutrition-infection cycle

An individual who is not well nourished, that is, a malnourished person has a weak or lowered immunity and is prone to infections. Frequent infections affect nutrient absorption and causes loss of appetite, nausea which can also result to vomiting. This further means the individual eats less. Infections especially if accompanied by fever often lead further loss of appetite leading to further reduction in food intake. This is the start of the malnutrition-infection cycle. Gastro-intestinal infections resulting to diarrhea further exacerbate or worsen malnutrition. Diarrhea is the passage of noisy, loose, watery sometimes blood stained stool more than three (3) times in a day. Diarrhea consequently leads to dehydration precipitating malnutrition. 8 Lowered immunity and mucosal damage are the major mechanisms by which defenses are compromised. Infections and diseases exacerbate loss of nutrients, both by the host’s (individuals) metabolic response, and by physical loss from the intestines. This worsens malnutrition, leading to further possible damage to immune systems which is the defense mechanism. Many diseases are associated with loss of appetite, and other possible disabilities, cycling back to further lower dietary intake. Figure 1 shows the Malnutrition-Infection Cycle.

Inadequate dietary intake

Weight Loss

Growth faltering

Immunity lowered

Mucosal damage

Appetite loss

Nutrient loss

Mal-absorption

Altered metabolism

Disease Incidence

Severity

Longer duration

Depletion of nutrition stores

1. Suggest some suitable meals for burn patients - children and adults.

A severe burn is not only painful and traumatizing, but it’s extremely stressful to the body. According to a 2012 report published in the “Surgical Clinics of North America,” the increased metabolic response associated with a severe burn surpasses that of any other disease state. A burn patient needs a high-calorie, high-protein diet to promote wound healing, minimize the risk of complications and maintain a normal nutritional level.

Calorie needs increase significantly after a burn. The average, healthy adult needs about 1,800 to 2,000 calories per day, but after a burn, this same adult may need at least 2,500 calories. If a burn patient is unable to consume enough food to meet these calorie needs, liquid nutritional supplements may be needed. These supplements should be taken between meals so as not diminish appetite during actual meals.

After a burn, the body breaks down muscles to use as energy for the healing process. Protein is also lost through the burn wounds. According to the 2012 report in the “Surgical Clinics of North America,” the breakdown of protein can exceed 150 grams per day. If a burn patient doesn’t consume enough protein to compensate, it can lead to decreased wound healing, loss of muscle mass and decreased immune function. Burn patients require a minimum of 1.5 to 2 grams of protein per kilogram of body weight, which would be approximately 102 to 136 grams of protein per day for a 150-pound man. You can get this amount of protein from 5 ounces of chicken breast, 1/2 cup of almonds, 1 cup of low-fat milk, 4 ounces of salmon and 1 cup of black beans.

Carbohydrates should be the main source of energy for burn patients, according to the 2012 report in the “Surgical Clinics of North America.” Burn wounds use glucose for energy, which is provided by carbohydrates. Upping carbohydrate intake will ensure there is enough glucose available to the wounds for healing so that they don’t turn to protein for energy. Instead, the amino acids from protein are spared and used to rebuild muscle instead. Carbohydrates also provide glucose for increased metabolic demands of the body as a whole. Choose healthy sources of carbohydrates, like whole grains, beans, fruits and vegetables.

Fat is necessary to provide essential fatty acids for healing and extra calories to compensate for increased metabolic demand, but too much fat can compromise the immune system, making healing more difficult. Fat intake should not exceed 30 percent of calories. Fat intake should be around 83 grams if you are consuming 2,500 calories per day. Choose healthy, unsaturated fats like nuts, nut butters, avocados, seeds, olive oil and fish. Two tablespoons of olive oil, one-half of an avocado, 1/2 cup of almonds and 4 ounces of salmon provide enough fat for the day.

In addition to increased calorie and protein needs, a burn patient may need additional vitamins and minerals -- specifically iron, zinc, selenium and vitamins A, C and D. Low levels of these vitamins and minerals have been linked to decreased wound healing and suppression of the immune system. Beef, spinach and nuts provide zinc, iron and selenium. Brazil nuts are especially high in selenium. Sweet potatoes and carrots are high in vitamin A, and you can meet vitamin D needs through consumption of swordfish, salmon and fortified milk and orange juice. Citrus fruits, berries, cantaloupe and kiwi fruit provide vitamin C.

1. Discuss the nutritional management of fevers

Nonprescription antipyretics and nonpharmacological measures are often used in the management and **treatment** of fever. Nonprescription antipyretics include acetaminophen (APAP) and nonsteroidal **anti**-inflammatory drugs, including aspirin, ibuprofen, and naproxen.

Fever by itself is not an illness, it is body’s own way of fighting infection or sickness. Fevers are usually caused due to various infections such as bacteria, viral, fungal or immune mediated

Common symptoms during fever are as stated by Axelrod and Diringer (2008):

Loss of appetite

Lack of interest.

Weakness

Cold sweats

In some cases there can even be vomiting, diarrhoea, cough and cold depending on the infection.

It is most important to manage all these conditions with good nutrition to alleviate the symptoms and make one feel comfortable.

The diet usually prescribed is a high calories, high protein, low fat and light fluid diet.

The first two or three days can be more of a fluid diet consisting of soups, glucose water, juice, milk (only if there is no diarrhoea). Give small frequent meal at regular interval, every two hours which can be gradually increased to every four hours.

Include foods which are soft, bland, easily digested and absorbed like gruels, cereal, milk, soft fruits like banana, papaya, orange, musambi, melons, etc. Soft or mashed curd rice or softly boiled veggies can also be included.

Fatty foods, spicy and high fibre foods are difficult to digest and should be avoided.

It is also very important to remember that during fever, there is an increased need of certain nutrients like vitamin A, vitamin C, vitamin B, calcium, iron and sodium.

Foods that should be eaten in times of fever include:

Fruit juices, Glucose water, Milk, Coconut water, Barley water, Custards, Egg, Vegetable juices, Soups, Cereal preparation, Tender meat, Baked fish, Butter milk with a pinch of salt, Boiled leafy veggies, Boiled veggies (carrots, beans, pumpkins, sweat potatoes)Orange and yellow fruits (citrus fruits).

1. Discuss the dietary management of the following liver diseases
2. Hepatitis

**Hepatitis** refers to an inflammatory condition of the liver. It's commonly caused by a viral infection, but there are other possible causes of **hepatitis**. These include autoimmune **hepatitis** and **hepatitis** that occurs as a secondary result of medications, drugs, toxins, and alcohol.

Prepare Meals With the Liver in Mind

**Low-fat meals**. The [liver](https://www.verywellhealth.com/why-is-the-liver-so-important-1760011) is an incredibly important organ to your body. It's involved in many aspects of nutrition. One important function of the liver is to produce bile, which the body uses to emulsify dietary fats, such as from potato chips or hamburgers. Before the body can absorb the fats and use their nutritional energy, all fats must be prepared by this process. However, depending on the damage to your liver, you might not be able to prepare enough bile to handle a meal high in fats. As a result, you might suffer indigestion because of the undigested fat. One solution is simply to eat low-fat foods. An alternative is to eat very small amounts of a high-fat food.

**Small meals**. If your liver is damaged, it isn't able to store as much energy as it once could. One of the jobs of the liver is to store the chemical glycogen, which it can quickly give back to the body when it needs immediate energy. Most people can store relatively large amounts of glycogen in their livers, but when the liver is damaged with fibrosis, the scar tissue takes away valuable storage space for glycogen. This explains one reason why people with the chronic liver disease often get tired quickly. One solution is to eat small, frequent meals making sure to include carbohydrates. This gives your body the chance to replace its glycogen reserves.

Protection of Liver

The liver is such a powerful filtering organ. Every five minutes, your *entire*blood supply is filtered through it. As blood filters through, the liver removes the toxins (anything poisonous to the body). The liver has an amazing capacity to keep doing its job even while damaged, but eventually, too much damage will reduce liver function. Therefore, it's in the best interest to reduce toxins to the liver. Here are some common toxins to the liver:

**Alcohol**. People with chronic hepatitis should avoid alcohol since it speeds progression to cirrhosis. People with cirrhosis should absolutely avoid alcohol.

**Unnecessary medicines**. Even though medicines are beneficial, they are still toxic chemicals that must be processed by your liver. It's important to follow your doctor's advice and take the medicines that you need and avoid the ones that you don't. Check with your doctor before taking a medicine if you have liver disease.

**Pesticides and herbicides**. Though these can absorb through your skin, they are still toxins ultimately processed by the liver.

**Household chemicals**. We use chemicals daily, sometimes without a second thought. People with chronic hepatitis should take extra caution to reduce exposure of these through fumes, ingestion and skin absorption.

**Vitamins and supplements**. Some vitamins (K, A, D, and E) are very important and necessary for people with chronic hepatitis and many doctors will prescribe vitamin supplements. However, aside from physician-recommended vitamins, use caution with additional supplements because they may be toxins.

**Healthful foods**. Your body needs good nutrition whether you have chronic hepatitis or not. To achieve good nutrition means that you're getting the nutrients you need (vitamins, minerals, protein, fat, carbohydrates, fiber) from the foods you eat. The quality and types of foods are important: fresh fruits and vegetables, lean meats (chicken, turkey, pork) and whole grains (barley, brown rice, whole wheat bread, and oatmeal).

**Exercise**. Along with nutrition, exercise is an essential part of good health. Some of the common symptoms associated with chronic hepatitis in the setting of no [cirrhosis](https://www.verywellhealth.com/what-is-the-best-diet-for-cirrhosis-1760062) or cirrhosis that isn't too advanced, such as fatigue or depressed mood, may be improved with regular, moderate exercise. You should begin any exercise program gradually and, depending on your level of health, under a physician's guidance. Most exercise, however, small the amount, is very beneficial to your health and well-being. It is an excellent complement to good nutrition.

1. Liver Cirrhosis

**Cirrhosis** is a complication of **liver disease** that involves loss of **liver** cells and irreversible scarring of the **liver**. Alcohol and viral hepatitis B and C are common causes of **cirrhosis.**

Many people diagnosed with cirrhosis of the liver want to know how to change their diet to improve their health. If you have [cirrhosis](https://www.verywellhealth.com/cirrhosis-what-you-need-to-know-1759889), the best diet is very close to the one you needed before you had the condition.

A good rule of thumb is that a healthful diet is helpful for just about anyone; this is especially true if you have cirrhosis. Foods like fruits, vegetables, whole grains, and proteins of proper types and in proper amounts are very appropriate.

In addition, it is a good idea to take a daily multivitamin. Depending on the degree of cirrhosis, some people might not have enough of the key minerals and fat-soluble vitamins (vitamins K, A, D, and E) that the body requires. While a balanced diet should easily provide these, your body may not be able to absorb them as well as is needed. When it doesn't, doctor can prescribe a supplement.

Unfortunately, malnutrition is common in people with cirrhosis because you may have a loss of appetite and changes in your metabolism. There is need to discuss the right diet with doctor or a dietitian.

1. Liver Failure

Management of liver failure requires intensive support and referral to a specialist paediatric liver unit for early consideration for liver transplantation. The essential aspects are:

To prevent complications such as encephalopathy and cerebral oedema, sepsis, gastrointestinal bleeding, renal failure, and multiorgan failure.

To assess prognosis and consider liver transplantation.

To provide hepatic support.

Essential management includes:

Fluid restriction to 75% of maintenance to prevent cerebral oedema and reduce encephalopathy.

Maintain glucose levels >4.0 mmol/l.

Prevent gastrointestinal bleeding with ranitidine 3 mg/kg and sucralfate 2–4 g/day.

Prevent sepsis using broad spectrum antibiotics and antifungal agents.

Control coagulopathy with intravenous vitamin K (2–10 mg); treatment of severe coagulopathy (prothrombin time >60 seconds) with fresh frozen plasma and cryoprecipitate.

1. a. Explain the differences between Type 1 and Type 2 diabetes mellitus

Type 1. This type of diabetes used to be referred to as Insulin Dependent Diabetes Mellitus (IDDM), juvenile diabetes or Autoimmune Diabetes. This is a type of diabetes that is common among children and is as a result of failure of the pancreas to produce insulin. People with [type 1 diabetes](https://www.healthline.com/health/type-1-diabetes-causes-symtoms-treatments) don’t produce insulin.

Type 2. This was previously referred to as Non-Insulin Dependent Diabetes Mellitus (NIDDM) or adult onset diabetes. This type results from either failure of the pancreas to produce adequate insulin or failure of body cells to utilize insulin or both. People with [type 2 diabetes](https://www.healthline.com/health/type-2-diabetes) don’t respond to insulin as well as they should and later in the disease often don’t make enough insulin.

1. Discuss the dietary recommendations for patients with diabetes mellitus

Among individuals at high risk for developing type 2 diabetes, structured programs that emphasize lifestyle changes that include moderate weight loss (7% body weight) and regular physical activity (150 min/week), with dietary strategies (such as reduced intake of fat) to reduce calories, can reduce the risk for developing diabetes and are therefore recommended. (A)

Individuals at high risk for type 2 diabetes should be encouraged to achieve the U.S. Department of Agriculture (USDA) recommendation for dietary fiber (14 g fiber/1,000 kcal) and foods containing whole grains (one-half of grain intake). (B)

Low–glycemic index foods that are rich in fiber and other important nutrients are to be encouraged. (E)

Although there are insufficient data at present to warrant any specific recommendations for prevention of type 2 diabetes in youth, it is reasonable to apply approaches demonstrated to be effective in adults, as long as nutritional needs for normal growth and development are maintained. (E)

Individuals who have pre-diabetes or diabetes should receive individualized MNT; such therapy is best provided by a registered dietitian familiar with the components of diabetes MNT. (B)

Nutrition counseling should be sensitive to the personal needs, willingness to change, and ability to make changes of the individual with pre-diabetes or diabetes. (E)

**Reference;**

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