ASSIGNMENT 3

1. **Discuss the relationship between nutritional status and immunity**?

Nutrition is a critical determinant of immune responses and malnutrition the most common cause of immunodeficiency worldwide. Protein-energy malnutrition is associated with a significant impairment of cell-mediated immunity, phagocyte function, complement system, secretory immunoglobulin A antibody concentrations, and cytokine production. Deficiency of single nutrients also results in altered immune responses: this is observed even when the deficiency state is relatively mild. Of the micronutrients, zinc; selenium; iron; copper; vitamins A, C, E, and B-6; and folic acid have important influences on immune responses. Over nutrition and obesity also reduce immunity. Low-birth-weight infants have a prolonged impairment of cell-mediated immunity that can be partly restored by providing extra amounts of dietary zinc. In the elderly, impaired immunity can be enhanced by modest amounts of a combination of micronutrients. These findings have considerable practical and public health significance.

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

Given the interaction between infection and malnutrition, all possible measures should be undertaken to break the negative synergism and the vicious cycle of infections leading to loss of nutrients and malnutrition which further predisposes to infections (see figure 1) 

Where it is considered necessary, suspected infections in malnourished children should be treated with broad spectrum antibiotics. The rationale for this treatment are that: malnourished children frequently have bacterial infections. Diagnosing infections in malnourished children based on signs or symptoms is often difficult because clinical manifestations of infection may not be apparent and malnourished children have insidious bacterial overgrowth in their small bowel.

What are the policy implications of this negative synergism? The recommendations of the World Health Organization (WHO) as detailed in figure 2 below, are that children with SAM and complications such as septic shock, hypothermia, skin infections, respiratory/urinary tract infections, should be given parenteral antibiotics (IM or IV) such as cephalosporin and gentamicin; while children admitted with SAM who have no apparent signs of infection and no complications should be given an oral antibiotic such as amoxicillin. Children with uncomplicated SAM not requiring any admission and managed as outpatients should also receive a course of oral antibiotics. However, children who are malnourished, with no SAM should not receive antibiotics unless they show signs of clinical infection.

Figure 2



Metronidazole is also recommended for its anti-anaerobic and anti-protozoal activity. Moreover, metronidazole is active against giardia and small intestinal bacterial overgrowth.

On the other hand, some authors argue that metronidazole has potential side effects in children which may complicate its use in SAM. Such side effects include nausea, diarrhea, thirst disturbance, anorexia, and potential metronidazole induced hepatotoxicity. Proponents of metronidazole use, recommend that doses be reduced to 10mg/Kg/day. Evidently tuberculosis, HIV infections, measles, and malaria should be adequately treated in SAM patients.

the nutritional status of children or worsen the nutritional status of an already malnourished child. The existence of this vicious cycle provides justification for active treatment of childhood infections in order to increase survival rates and the possibility of meeting the sustainable development goals and targets relating to childhood mortality in many developing countries.

3.**Suggest some suitable meals for burn patients - children and adults?**

The main objectives of nutrition management are to maintain body weight, replace lost fluids and promote wound healing. A high protein, high calorie diet is highly recommended for burn patients.

The degree of burn and surface area

 The location of the burn

 The calorie and protein needs

 Ability of the patient to take oral diets

 Functioning of the gastrointestinal tract

 Electrolyte balance

 Liver and renal/kidney functions

 Previous nutritional status

 Surgical plans for the patient

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| 1. **Discuss the nutritional management of fevers**   fever is an elevation of body temperature above the normal which results from an imbalance between the heat produced and the heat eliminated from the body. Fevers may occur in response to an infection, inflammation, allergic reactions and metabolic disorder. pre-Breakfast Milk with a soft bun breakfast Milk, poached egg, bread, a slice of melon, snack Corn flakes in milk, boiled rice or soft cooked chapatti, mashed carrot, dal or mung bean stew, fruit pudding, snack Orange Juice or egg nog, Wheat or millet gruel, mixed vegetables puree, soft chapattis, pineapple upside down cake and fruit juice Kebab and a drink . |

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

The goal of a hepatitis diet is to minimize stress on your liver, which is already compromised by the inflammation that defines the condition. Perhaps surprisingly, an ideal eating plan for chronic hepatitis is simply one that aligns with healthy eating guidelines for all adults provided by the U.S. Department of Agriculture (USDA). A nutritious diet can help you maintain an optimal weight and may help you to preserve healthy liver function.

While you may need to adjust your diet based on your specific diagnosis, the guiding principles of basic nutrition are likely to give your body what it needs without further taxing your liver.

Diet can support the liver and help manage symptoms of hepatitis. Constant fatigue is the most common one; others include diarrhea, joint pain, and trouble eating full meals. [Research](https://doi.org/10.1097/MCO.0000000000000396) has demonstrated that malnutrition and loss of muscle mass become more common as the condition progresses. Some people also have a difficult time maintaining a healthy weight.

Following the eating guidelines recommended by nutritional experts and endorsed by the USDA will help you to sustain energy levels throughout the day, maintain muscle mass, and keep your body at a healthy weight. You can tweak your plan as needed to manage symptoms such as stomach discomfort as they arise.

The [2015-2020 Dietary Guidelines](https://www.verywellfit.com/all-about-the-dietary-guidelines-for-americans-1095144) emphasize eating a wide variety of nutrient-dense foods—that is, those that provide great nutritional value and few calories. People are also encouraged to develop an overall pattern of healthy eating rather than focusing on single food groups.

**Fruits and vegetables:** Fruits and vegetables provide your body with vitamins and minerals important for a healthy body. Consuming these fiber-rich foods may also help you decrease your intake of less healthy foods, such as fatty meats or sugary treats, as they are quite filling.

Consumption of leafy green vegetables, in particular, may provide benefits to those managing hepatitis. [Studies](https://dx.doi.org/10.1186%2F1476-511X-12-168) have shown that these can lessen the fatty acid composition in your liver.

**Grains:**Foods in the grain category include bread, pasta, rice, and oats. Dietary guidelines suggest that at least half of the grains you consume be [whole grains](https://www.verywellhealth.com/great-whole-grains-to-try-2506889), rather than refined grains (such as white bread, white rice, or white pasta). Whole grains help boost your protein intake, which can help you to maintain muscle mass.

**Protein foods:**Consuming the right amount of protein is important when you have chronic hepatitis. Eating enough protein can help you to avoid malnutrition and muscle wasting. But consuming too much protein can lead to complications including a conditionknown as [encephalopathy](https://www.verywellhealth.com/hepatic-encephalopathy-a-treatable-cause-of-memory-loss-4123646). [Experts](http://www.hepctrust.org.uk/information/living-hepatitis-c/diet) advise that you consume 1 to 1.5 grams of protein per kilogram (kg) of body weight (1 kg equals about 2.2 pounds). Lean meats, milk, nuts, and cheese are all good sources of protein.

**Coffee:** [Studies](https://dx.doi.org/10.1016%2Fj.jceh.2016.02.003) have shown that drinking a caffeinated beverage like coffee reduces the risk for advanced liver scarring in people with chronic hepatitis. So far, evidence suggests that consuming two large cups of coffee—or about 100 milligrams (mg) of caffeine—is associated with a significant reduction in advanced scarring.

**Healthy fats:** Dietary guidelines advise that you consume less than 10% of calories per day from saturated fats and eliminate trans fats completely. They suggest that you replace both of these with healthier fats. Saturated fats are found in red meat and full-fat dairy products. Trans fats (partially hydrogenated oils) are being gradually eliminated, but you may occasionally still find them in some foods including fried snack foods or processed baked goods.

Healthy plant-based fats such as olive, sunflower, or avocado oils provide polyunsaturated and monounsaturated fatty acids that are associated with health benefits including a reduced risk for heart disease. However, all fats and oils should be consumed in moderation.

Consuming too much fat can lead to problems, especially for those living with chronic hepatitis, including fatty deposits in the liver, fatty inflammation, and fatty cirrhosis.

**Excess salt:**Per the USDA's guidelines, a healthy eating pattern limits added sodium/excess salt. Heavily processed foods, including snack foods, fried foods, convenience foods, and microwavable meals often are what put someone over the limit, which is 2,300 mg a day for most people. (Ideally, you should consume less.)

If chronic hepatitis progresses to liver cirrhosis, there can be an accumulation of fluid in the abdomen, a condition called [ascites](https://www.verywellhealth.com/understanding-ascites-513678). People with ascites should restrict their sodium intake to less than 1000 mg per day.

**Excess sugar:**Nutrition experts are increasingly concerned about added sugars contained in many popular foods. As such, nutritional guidelines suggest that youconsume less than 10% of calories a day from added sugars, which are often found in sweetened sodas, juice drinks, and other sugary treats.

People with hepatitis should be especially careful to consume sugar in moderation. [Studies](https://dx.doi.org/10.1038%2Fs41598-017-04206-6) have shown that hepatitis is associated with an increased risk of diabetes. Reducing your intake of added sugar can help to decrease this risk.

**Excess iron:** The liver plays a key role in the metabolism and excretion of iron. Some people with chronic hepatitis aren't able to release iron properly from the body and may experience iron overload, increasing the risk of tissue damage in the liver. For this reason, people with chronic hepatitis may need to reduce the amount of iron-rich foods in their diets. These foods include red meat, liver, oysters, lentils, apricots, and iron-fortified cereals.

However, iron is an essential part of your diet, so do not cut it out entirely. It is also important to note that vitamin C increases the absorption of iron from food. If you've been advised to reduce your iron intake, you may also need to reduce your intake of foods that are high in vitamin C, like citrus fruits, strawberries, kale, and broccoli.

1. **(Liver Cirrhosis**)

If you’re a liver patient, your diet is adjusted to meet your individual needs. Talk to your doctor about what’s best for you. Still, here are some general food tips for a healthy or healthier liver:

* **What to avoid**: Don’t eat foods high in fat, sugar and salt. Stay away from a lot of fried foods including fast food restaurant meals. Raw or undercooked shellfish such as oysters and clams are a definite no-no.
* **Talk to your doctor about alcohol and your liver health**: Depending on the state of your liver, you should avoid alcohol. If you’re allowed alcohol, limit it to no more than one drink a day if you’re a woman and two drinks a day if you’re a man.
* **Eat a balanced diet**: Select foods from all food groups: Grains, fruits, vegetables, meat and beans, milk, and oil.
* **Eat food with fiber**: Fiber helps your liver work at an optimal level. Fruits, vegetables, whole grain breads, rice and cereals can take care of your body’s fiber needs.
* **Drink lots of water**: It prevents dehydration and it helps your liver to function better.
  1. **a. Explain the differences between Type 1 and Type 2 diabetes mellitus**?

**type 1 diabetes mellitus**

Results from destruction most commonly autoimmune, of the pancreatic beta cells. Insulin is required for survival. It is genetically related.

It characterized by sudden acute or sub-acute. It affects people from age bellow 30 years with moderate to severe and it symptoms is present. Patient often loss weight rapidly before diagnosis, insulin deficient, need insulin for survival, less frequent at diagnosis, generally liked and the insulin therapy is the treatment option.

**Type 2 of diabetes mellitus**

Characterized by insulin resistance and/or abnormal insulin secretion, either of which may predominate, but both of which are usually present. It is the most common type of diabetes. Mainly associated with lifestyle.

Its slow and progressive, it affects patients above the age of 40 years, the symptoms is often asymptomatic at the start. Patient are usually overweight at the start and start losing weight gradually with disease progression. It has chronic complications present due to late diagnosis, stronger and higher inheritance risk. The treatment is initially lifestyle change.

1. **Discuss the dietary recommendations for patients with diabetes mellitus**

Diet should provide adequate energy and preferably from complex carbohydrates as these provide and release energy more slowly and steadily. Saturated fats are not recommended. Sufficient proteins should be provided from both animal and plant sources. Consumption of high amounts of fruits and vegetables is highly recommended. Salt intake should be low. All these should be accompanied by physical activity.

CONCLUTSION

Malnutrition and infection constitute a devastating vicious cycle which can be life threatening to patients, especially children under 5 years of age. On one hand, children are more vulnerable because of their relatively weak immune system and high incidence of gastrointestinal and respiratory infections which can result in malnutrition. On the other hand, those with severe acute malnutrition have increased susceptibility to infections which might be life-threatening because of their compromised immune status. Within this cycle, repeated and chronic infections tend to compromise to childhood mortality in many developing countries.

REFERANCES

1. Raska K, Jr, Raskova J, Shea SM, et al. T cell subsets and cellular immunity in end-stage renal disease. *The American Journal of Medicine*. 1983;75(5):734–740. [[PubMed](https://www.ncbi.nlm.nih.gov/pubmed/6227236)] [[Google Scholar](https://scholar.google.com/scholar_lookup?journal=The+American+Journal+of+Medicine&title=T+cell+subsets+and+cellular+immunity+in+end-stage+renal+disease&author=K+Raska&author=J+Raskova&author=SM+Shea&volume=75&issue=5&publication_year=1983&pages=734-740&pmid=6227236&)]

2. McMurray DN, Loomis SA, Casazza LJ, Rey H, Miranda R. Development of impaired cell-mediated immunity in mild and moderate malnutrition. *The American Journal of Clinical Nutrition*. 1981;34(1):68–77. [[PubMed](https://www.ncbi.nlm.nih.gov/pubmed/7446461)] [[Google Scholar](https://scholar.google.com/scholar_lookup?journal=The+American+Journal+of+Clinical+Nutrition&title=Development+of+impaired+cell-mediated+immunity+in+mildand+moderate+malnutrition&author=DN+McMurray&author=SA+Loomis&author=LJ+Casazza&author=H+Rey&author=R+Miranda&volume=34&issue=1&publication_year=1981&pages=68-77&pmid=7446461&)]

3. severe acute malnutrition in infants and children. WHO Library Cataloguing-in-Publication Data ISBN 978 92 4 150632 8. (NLM classification: WD 101), 2013.

4. Golden MH, Grellety Y. PROTOCOL: 279–286. UNICEF, Malnutrition 2018; Available at: https://[4] data.unicef.org/topic/nutrition/ malnutrition/. Accessed 10 February 2018.