

COVID-19 AND DIET

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Abstract : Body building foods, energy giving foods, and protective foods are the food groups which provides nutrients to the body, to keep our body healthy and disease free. These nutrients are protein, carbohydrates, fats, minerals, vitamin and water. The non nutrients are antioxidants, phytochemicals and dietary fiber are also essential in our diet to increase immunity of our body. The diet for COVID patients is to provide to rebuild muscle, increases immunity and energy levels. During Covid 19, the body gets weakened and is continuous for few days even after recovering from the symptoms. This virus affects the lungs and cell tissues and cause flu and pneumonia. . A balanced diet is a key to maintain good health and increases immunity. Balanced diet must provide moderate carbohydrates, fats, and High Biological Value proteins. Covid defence or fight against virus the diet should contain antioxidant, minerals, vitamins and protein and calories.

Key word: Balanced diet, Nutrients, RDA.

Introduction : Body building foods, energy giving foods, and protective foods are the food groups which provides nutrients to the body, to keep our body healthy and disease free. These nutrients are protein, carbohydrates, fats, minerals, vitamin and water. The non nutrients are antioxidants, phytochemicals and dietary fiber are also essential in our diet to increase immunity of our body. The supply of these nutrients in adequate amount, and correct or proper proportion in our diet according to age, sex, physical activity and physiological status. This type of diet plan called balanced diet. Recently, ICMR and NIN provide a new concept of balanced diet that is, **"My plate for the day"** on the basis of Recommended Dietary Allowances (RDA). The plate recommend sources are macro and micro nutrients from 8 food groups per day with fruits, vegetables, green leafy vegetables, tubers are essential in half of the recommended foods per day and other half of the major portion consist of cereals and millets , pulses and legumes and milk and its products. My plate for the day typically recommends 40% of calorie/energy intake from cereals and millets, 17% energy from pulses and 10% energy from milk and milk products provides 2000kcal for Indian diet per day. My plate for the day

provides good health or protect from disease or from deficient nutrients, otherwise the body may become weak and can affect to infection from bacteria or virus.

Objective:

1. To make aware the role of nutrient for covid patient.
2. To gain knowledge of diet for Covid 19.

Methodology - Total and complete data was collected from secondary sources that is., from books, news papers, magazine, internets and online webinars.

Discussion - The diet for COVID patients is to produce, or to rebuild muscle, increase immunity and energy levels. During Covid 19, the body gets weakened and is continuous for few days even after recovering from the symptoms. This virus affects the lungs and cell tissues and cause flu and pneumonia. During this crucial period, needs to take care of health and diet ,and fight against virus by taking or consuming correct or right nutrients by selection of food items. to prevent or become healthy or quickly recovery by providing proper nutrition with balanced diet or My plate for the day. A balanced diet is a key to maintain good health and to increase immunity. Having a balanced diet with moderate carbohydrates, fats, and high biological Value proteins. Covid defende or fight against virus diet should contain antioxidant, minerals, vitamins and protein and calories.

Role of Nutrients - Protein: Proteins are the principal components of each and every living cells, and is important in all aspects of cell structure and its function. Improve immunity to fight against infection. . The cereals-pulses-milk composition of the diet has been improved to 3:1:2.5(ICMR 2020) as compared to the earlier 11:1:3 (ICMR 2010) to meet daily protein requirement. Source are cereal, legumes, milk and milk products and egg, meat and fish.

Fats or Lipids - Intake of fat in moderate amount. Omega 3fatty acids are to be included in the diet. Use vegetable oil that is mostly preferred 1 tsp of ghee and 3 tps of vegetable oil per person/day was required.

Vitamin A - It helps to regulate the immune system. Since covid 19 appears to impact mucosal tissues throughout the body. Vitamin A could potentially be a supportive nutrient to protect barriers function. It helps in immune cell maturation and function. It promotes bacterial killing. Vitamin A is easily available in all colorful fruits and vegetables. i.e., all green leafy vegetables, carrot, sweet potatoes, pumpkin, papaya, tomatoes and mango etc.

Vitamin C - It is an important nutrient for immune health and for white blood cells. It plays a role in iron absorption and protect from cell damage due to oxidation. It helps to prevent the respiratory infection. Normal functioning of T-cell. It has Antimicrobial, anti inflammatory and antioxidant effect. **Citrus fruits** like Amla, guava, grapes, oranges, lemons, sweet lime, goose berries, and red bell pepper, fresh leafy vegetables, cabbage, capsicum and drumstick leaves are good source of Vitamin C.

Vitamin D -It is helpful to protect against respiratory and lungs infection. Vitamin D is to synthesize in the skin from 7-dehydrocholesterol by sun (UV) light exposure. In most situations, approximately 30 minutes of skin exposure to daily sunlight can provide the vitamin D needs of the body.

Vitamin E - It plays an important role in lungs and liver protection and for normal function of the immune cells. It supports to T-cell. Food source are Almond, kiwi, broccoli, olive oil, corn oil, palm oil, peanut and cotton seed oil.

Folic Acid - It is required for normal cell division and for structure of the nervous system. It is essential for red blood cells.

Selenium - It plays an important role in the functioning of immune system. Normal functioning of T-cell. It has Anti body production, Antimicrobial, anti inflammatory and antioxidant effect. The sources of foods grains are nuts, dairy products and meat.

Zinc - It reduces oxidative stress and prevents cell damage. It also stimulates T cell production, Reduction in risk of pneumonia, common cold and infectious diarrhea. Improves the sense of taste, smell and vision. Support of lymphocyte and cytokine functions .It inhibits the activity and replication of corona virus. Normal functioning of T-cell. It has Anti-body production, Antimicrobial, anti inflammatory and antioxidant effect. Whole grain, legumes, shell fish these are the food sources of Zinc. Chickpea, green gram, black

gram, lentils, and beans are provide many nutrients including protein, iron and Zinc.

Iron - It is required for immune cell production and for formation of red blood cells .It is involved in DNA synthesis. It is bound to proteins such as transferrin and ferritin. Sources are all green leafy vegetables, sprouted legumes and some fruits.

Copper - It supports in enzymes transport, iron and load it into hemoglobin, a protein that carries oxygen through the blood. It also provides a natural defense against free radical that damages the body. It also manufactures collagen that is required for skin and bones. It has power of immune response. Whole grain, legumes, nuts and mushrooms are sources of Copper.

Nutrition management for mild symptoms

1. Food should be provided in adequate.
2. Increase interval between two meals.
3. Increase calories and protein diet or give energy rich foods and high biological value protein.
4. Increase the consumption of green leafy vegetables.
5. Give supplementation of Vitamin C, Zinc, Vitamin D, Antioxidants, Multi minerals, Multi vitamin, if not found enough from the diet.
6. Increase the consumption of colorful fruits, before use of the fruits, wash with warm water or use soda-bicarb to the water, the fruits are soaked in it for few minutes then are used to prepare or eat.
7. Take turmeric milk once in a day or twice.
8. Stress free living.
9. Sound sleep i.e., 8 hours of a day.
10. Regular or daily physical and breathing exercise.

Dietary guideline:

For Pregnant and Lactating Women:

1. Should eat a wide variety of foods, i.e., daily intake of green leafy vegetables 50gm, other vegetables 200gm and fresh fruits 100gm.
2. High quality and biological value protein foods and iron rich foods include in the daily diet to make sure that their nutritional needs as well as of the growing fetus should be met.

For Cough -

1. Frequently use warm water.
2. Drink lemon water twice in a day
3. Prefer honey with ginger.
4. Warm water with Tulsi leaves

For Diarrhoea -

1. 400 to 600 kcal/day and 30gm of protein should be through oral nutritional supplements and continued for a month.
2. Assessment should be done every 3rd day for patient.

For Cardiac and Diabetic patients -

1. Avoid stress.
2. Do exercise at home for 20 minutes.
3. Take proper rest; sleep at evening 2 hour and at night 6 to 7 hours, complete 8 hours sleep was required.
4. Avoid alcoholic beverages; take tea and coffee in moderate amount.
5. Avoid whole milk prefer skimmed milk.
6. Omega 3 fatty acid foods and PUFA are used.
7. Saturated fat, Trans fat and high cholesterol foods are avoid.
8. Reduced sugar and refined carbohydrates foods.
9. Include small and frequent meals.
10. Beverages like fruit juices and butter milk are preferable.
11. Consume at least 1 serving of protein rich food in each meal or at least 2 to 3 serving of protein rich foods per day.

For Urinary Tract Infection -

1. Maintain fluid balance.
2. Avoid urinary infection by hydration.
3. Intake of Vitamin C in the diet upto 1 to 2 gm/day.

WHO - Recommends to

1. Eat fresh and unprocessed food every day
2. Daily eat 2 cups of fruits(4 serving), 2.5 cups of vegetables(5 serving), 180gm of grains and 160 gm of meat (red meat can be eaten 1 to 2 times per week and poultry 2 to 3 times per week).
3. Drink 8 to 10 glasses of water daily.
4. Avoid industrially produced Trans fat foods.
5. Avoid to eat outside food
6. Remain stress free.
7. Less than 10% of total energy intake from free sugars, which is equivalent to 50 g .
8. Less than 30% of total energy intake from fats. It is suggested that the intake of saturated fats be reduced to less than 10% of total energy intake and *trans*-fats to less than 1% of total energy intake. Instead of these fat includes or consumed polyunsaturated fats.
9. Consumed Less than 5 g of salt (equivalent to about one teaspoon) per day. Salt should be iodized.
10. From these guidelines fulfill all nutrients i.e., protein, Vitamin A, vitamin B6, Vitamin B12, Vitamin C, Vitamin D, Vitamin E, folates and minerals namely, Zinc, Copper, Iron, and Selenium are particularly important to boosting immune response.

By ICMR and NIN Recommends:

Vitamin, Minerals and phytonutrients are available in fruits, green leafy vegetables nuts and whole grains. They play role in several metabolic process that leads to optimal immune function. These nutrients

1. It enhances both native and adaptive immune function and prevents infection.
2. To control the inflammation and prevent tissue damage.
3. To help to clear toxins that are produce in body during infection.
4. To reduce transmission of toxins from the intestine to the blood circulation by intake of probiotic foods.

5. Limit consumption of highly processed foods, carbonated drinks.
6. Consuming meat, poultry and eggs is not risky, but hand wash hygiene must be followed after handling raw meat, eggs or even vegetables. Thoroughly cooked meat/ poultry may be included in moderation.
7. Ensure the serving of fresh fruits and vegetables i.e., 450 to 500gm per day per person.
8. Avoid too much fat (no more than 30 gm/person/day-preferably more than 2 varieties of oils), salt (no more than 5gm/person/day), and sugar is just calories with no nutrients.
9. Maintain ideal body weight (less than 18.5 BMI is undernourished, and more than 25 is overweight) being underweight or overweight/obese – impairs immunity and increases inflammation
10. Moderate physical activity/yoga will reduce stress and increase immunity
11. Adequate intake of water for good immune response.
12. Avoid smoking & alcohol as they adversely affect immunity and increase the risk and severity of infections.

The nutritionist **Sandhya Gugnani** recommended some food and diet tips based on the latest research.

Recommended dietary allowance (RDA) for Covid patients -

On 1st and 2nd day, provide 50% of the nutritional requirement of the patient and from 3rd day provide 70%, by the end of the week provide 100% requirement.

Calorie requirement / RDA:

- 1) Non-obese -25-30kcal/kg Actual Body Weight
- 2) Overweight or obese- 25-30kcal/kg IBW or Adjusted BW
- 3) Underweight -25-35kcal/kg Adjusted BW
- 4) Protein requirement – 1-1.5gm/kg/ Actual Body Weight

- 5) Fats requirement – 25-30% of the total calories
- 6) Multivitamin, minerals & trace elements
- 7) Vitamin D – 10-1000mcg/day
- 8) Vitamin A – to be consumed through diet
- 9) Vitamin E – 134-800mg/day
- 10) Zinc – 30-220mg
- 11) Vitamin C – 200mg- 2gm

The above micronutrients increase the T-cells & B-cells (antibody) in your body and will help in COVID recovery.

Sample Diet Chart or Meal plan:

- 1) Early Morning : Soaked dry fruits/ Herbal tea/ Warm water with lemon.
- 2) Breakfast : Include Ragi food items like upma/ Dokala/ Sprouted legumes/boiled egg/ Fermented food items like idli.
- 3) Mid Morning : Vegetable soup/ Fruit juices.
- 4) Lunch : Pulka/chappati, Rice, Dhal, green leafy vegetable curry, other vegetable curry, use any root and tubers for salad with curd.
- 5) Snack : Veg.sandwiches/ Bhel/ Sprouted chats.
- 6) Dinner : Rice dhal/ Veg. khichdi/ multi grain Roti with veg. curry/ use root and tubers slices.
- 7) At night before sleep: one glass of milk with turmeric/ ginger.

Conclusion : To reduce the weakness in the covid patient body, have a balanced diet and increase the immunity response and take care of diet. Intake of balanced diet by Fruits 150gm/day, Pulses, egg and flesh foods 90 gm/day, Milk and curds 300ml/day, fats and oil 27 gm/day, Cereals and nutri-cereals 240 gm/day, vegetables 350gm/day. For adequate hydration use water 2.5 to 3 liter/day intake. Roughly to increase immunity have 2 bowls of fruits /3 bowls of vegetables. By following the balanced diet nutrients are fulfilled for the covid patient to become healthier. Especially nutrients like Antioxidants, Zinc, Selenium, Iron, Vitamin C, Vitamin D, Vitamin E. Omega 3 fatty acid. The recommendation of these nutrients are;

Sr.No	Nutrients	Healthy person	Infected or disease Patient
1.	omega 3 fatty acid	250 to 300mg/day	1500 to 3000mg/day
2.	Selenium(se)	40microgm/day	up to 200 microgm/day
3.	Zinc	17mg/day for men and 13 mg/day for women.	75 mg/day administered within 24 hours Zinc gluconate: 13mg/ day within 3 days.
4.	Iron	19 mg/day for men and 29mg/day for women.	60mg/day (Taken with food to avoid gastric discomfort required for covid patient)
5.	Vitamin C	80mg/day	1 to 2 gm/day
6.	Vitamin D	600IU	10,000IU during few weeks and followed by 5000IU.
7.	Vitamin E	15mg/day	200IU/day

Source : Dr. Laskshmi Jagarlamudi.

Prefer the above Diet chart, Balanced diet and RDA then the patient recovery should be as early as possible and give with the supplement of above nutrients.

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My plate for the day by-ICMR and NIN.