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FOOD AS MEDICINE

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INTRODUCTION

- The world is facing a global epidemic of diet-related chronic disease. In fact, according to a 2020 article published in [*The BMJ*](#), “one of every five deaths across the globe is attributable to suboptimal diet, more than any other risk factor including tobacco.” In response, “there is increased experimentation with the use of ‘food is medicine’ interventions to prevent, manage, and treat illness.”
- [Food as medicine](#), also known as “[food is medicine](#)” sits at the crossroads of nutrition and healthcare. It may take many forms, including medically tailored meals, medically tailored groceries, and produce prescription programs. ASN (American Society of Nutrition) Journals support the growing interest in food as medicine, publishing original research articles and reviews that help dietitians, clinicians, and other healthcare providers determine which types of food as medicine interventions work, who benefits the most, and how to best implement them.
- Nutrition education classes demonstrated significant improvements in diet and health literacy.

A collage of various food items is positioned on the left side of the slide. It includes a pile of brown sugar at the top left, two pats of butter below it, a small pile of black chia seeds to the left of the butter, a pile of sliced almonds below the butter, and a small bowl of orange oil at the bottom left. The background of the slide is a light gray gradient.

WHAT IS NUTRITIOLOGY?

- The word “**nutritiology**” comes to us from the Greek language and is translated as “the science of nutrition”. In simple words, nutritiology is a science that studies such issues as food intake, composition of foods, their combination and their effects on the human body.
- Even ancient people were interested in how nutrition affects people. Each culture gradually developed certain food habits that corresponded to the habitat and social structure of the particular society.
- However, traditional food systems are totally inappropriate for modern humanity, which lives in an era of large-scale industrial production and urbanization. The cult of eating on the go flourishes, and genetically modified and lavishly chemicalized food has long been the norm for all of us. And, of course, these factors seriously compromise human health.

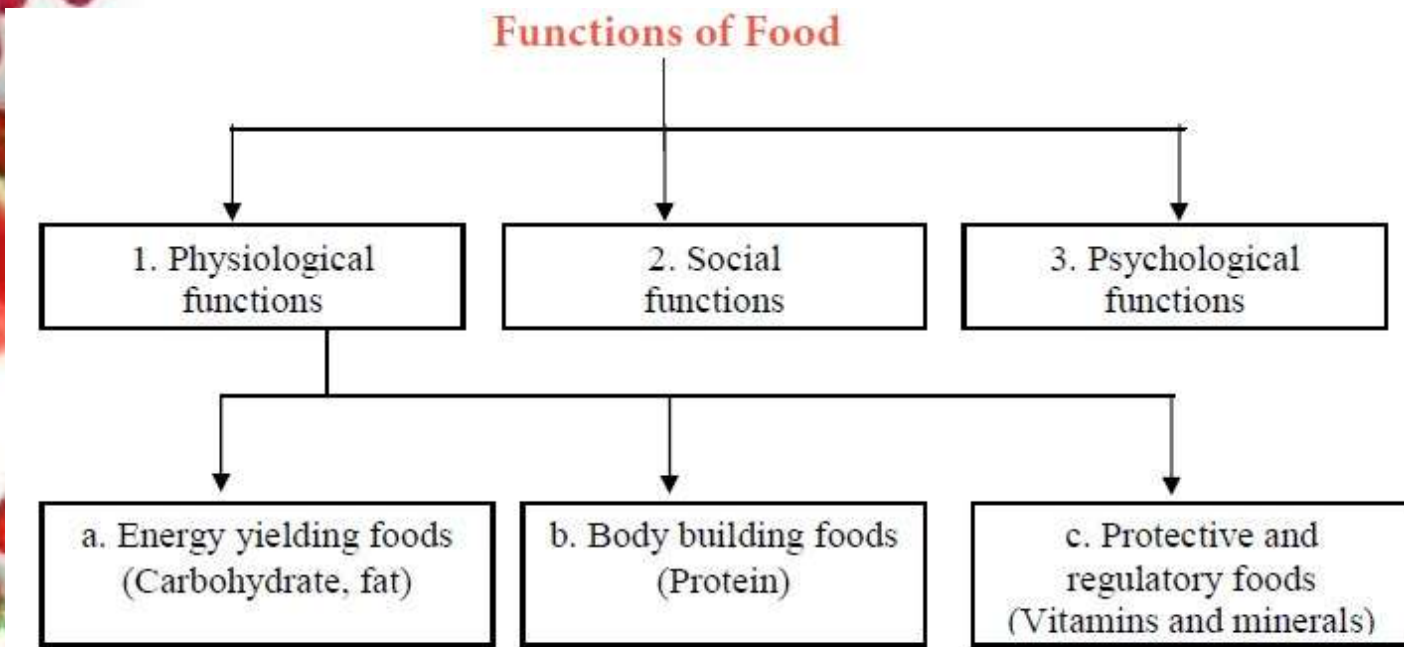


- **A nutritionist** is a nutrition and lifestyle specialist.
- Both a nutritionist and a dietitian deal with nutrition, but they are fundamentally different in the following ways:
 - A nutritionist deals with people with diseases and prescribes medications, treatment tables and diets.
 - The nutritionist helps to increase health in the conditionally healthy person with an individualized approach to the particular body, taking into account the lifestyle of the mentee.
 - He knows everything about the composition of foods (even the most unobvious facts), their interaction with the body, useful and harmful effects on health.
 - He studies the biochemical composition of food and its effects on the human body in order to prevent disease and improve well-being and health.
 - With the help of questionnaires and tests, he helps you understand the condition of your body and, if necessary, refers you to a doctor for a diagnosis.
 - He or she will choose the necessary supplements to replenish vitamins and other vital substances, the deficiency of which can lead to serious health consequences.
 - He helps to adjust the way of life and nutrition individually for a particular person, depending on his needs: to lose weight, gain muscle mass, improve health and well-being, increase energy levels, as well as for the prevention of many diseases, and all this without the use of medicines.
 - The main task of the nutritionist is to help the client understand himself and his body, and to help him function as comfortably and healthily as possible, and to build his diet in the most optimal and conscious way.
 - The nutritionist takes into account a host of factors, from the patient's genetic predisposition to their current state of health and psychological factors.

A collage of various food items is positioned on the left side of the slide. It includes a pile of brown sugar at the top left, two pats of butter below it, a small pile of dark chia seeds to the left of the butter, a pile of sliced almonds below the seeds, and a small bowl of yellow oil at the bottom left. The background is a light, neutral color.

IMPORTANCE OF FOOD

Food is the third most important thing for living beings to provide energy and development, maintain life, or stimulate growth after air and water. It is one of the most complicated sets of chemicals. Food plays an important role in the promotion of health and disease prevention. In general, it consists of essential nutrients, such as carbohydrates, proteins, fats, minerals and vitamins which are consumed to provide nutritional support for an organism and ingested by an organism and assimilated by the organism's cells to sustain health. These nutritious foods are in the form of grains, pulses, fruits, vegetables, oils, etc.



▲ Figure 2.1 Functions of Food

The essential function of food is to satisfy hunger and the need for essential nutrients. Various functions are:

- Physiological functions
- Social functions
- Psychological functions

Physiological functions

Following are some physiological functions of food:

Providing Energy:

- The first function of the food is to provide energy. Our body needs the energy to sustain the involuntary processes essential for the continuance of life, to carry out professional, household and recreational activities, to convert food ingested into usable nutrients in the body, to grow and to keep warm. The energy needed is supplied by the oxidation of the foods consumed.

Body Building:

- One of the most important functions of food is building the body. Foods rich in protein are called bodybuilding foods. Milk, meat, eggs, and fish are rich in proteins of high quality. Pulses and nuts are good sources of protein but the protein is not of high quality. These foods help to maintain life and promote growth. They also supply energy.

Regulatory Function:

- Another function of food is to regulate various activities of the body. It includes the regulation of varied activities such as:
 - Heartbeat
 - Muscle contraction
 - Maintenance of the body temperature.
 - Control of water balance
 - Clotting of blood
 - Removal of waste products from the body

To improve our body's resistance to disease is also one of the physiological functions of food.



Social functions

- Food has always been the central part of our community, social, cultural and religious life. It has been an expression of love, friendship, and happiness at religious, social and family get-togethers. Many of the occasions are related to special foods like Birthdays, Holi, Diwali, Lohari, Eid, etc
- Food is served almost on all social events like marriages, parties, get-together, official meetings, etc., in the form of tea, breakfasts, banquet, dinner, etc. On all these occasions, food indirectly serves as a powerful and effective instrument for developing social rapport.
- Food is the common link in a meeting, party or get-together that attracts people to come to such social gatherings. Refreshment served even at official meetings creates a relaxed atmosphere, where people can exchange their views. The menu for such get-to-gather should bring the people together, rather than divide them. Foods help to strengthen mutual friendship.



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- Food also has a specific significance and meaning in the religious context. Certain food items such as fruits, sweets, and coconut are offered to the deity in temples. Often sweets are prepared at temples and gurudwaras and distributed to devotees as a benediction or prasad.
 - Further, people of a given religious community share a common eating pattern. This is because religious texts and practices strongly recommend some foods while rejecting others. Food thus becomes an integral part of the social and religious life of people.
 - The social function of foods can be seen daily like in many of the family there is a dining culture as all the family members unite to have dinner which creates a good relationship among them.

Psychological functions

- In addition to satisfying physical and social needs, foods also satisfy certain emotional needs of human beings. These include a sense of security, love, and acceptance. For example, the preparation of delicious foods for family members is a token of love and affection.
- The person begins to associate the food habits and foods commonly consumed by him, as it gives him a sense of security and satiety. The foods daily eaten by us, give us more mental satisfaction, even a nutritional balanced meal may not be satisfying to the individual if food include is unfamiliar or distasteful to him/her.



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- In a friendly gathering, one may try unfamiliar foods and thus enlarge our food experiences. During the course of time and repeated experience, strange foods become familiar and new tastes are formed. These new tastes are developed should again be satisfying to the mind. For example, a person accustomed to traditional Indian cuisine takes time to adjust to Chinese or western dishes but feels mentally satisfied at the sight of familiar foods.
 - Food is used to express feelings of special attention, friendship, recognition or punishment. Some peoples are addicted to any specific food and they want that to satisfy themselves. Few have habits of dessert after every meal which is related to their psychological needs. Some peoples eat a lot in anger or frustration. In all these situations food has psychological importance.
 - Thus it can be concluded that food performs various important functions from satisfying the hunger to building mutual understanding and above all helps to maintain our health and adequate nutritional status.

CLASSES OF FOOD WITH EXAMPLES AND FUNCTIONS

There are seven major classes of food based on their nutrient properties

1 CARBOHYDRATES

Carbohydrates are the sugars and starches found in fruits, grains, vegetables and milk products. Though often maligned in trendy diets, carbohydrates are important to a healthy diet.



2 PROTEINS

Protein makes up the building blocks of organs, muscles, skin, and hormones. Your body needs protein to maintain and repair tissues.



3 FATS

Fats are a source of energy, temperature regulation and vitamin absorption. Fats can be found in various foods, like dairy products, meat, fish, whole eggs, vegetables, nuts



4 FIBER

Fiber can be found in fruits, vegetables, pulses, and whole grains. Fiber is needed to keep our digestive system healthy, prevent coronary heart diseases, bowel cancer, and diabetes.



5 MINERALS

Minerals represent various functions like building blocks for our muscles, bones and teeth, carrying oxygen in our body, and keeping fluids balanced.



6 VITAMINS

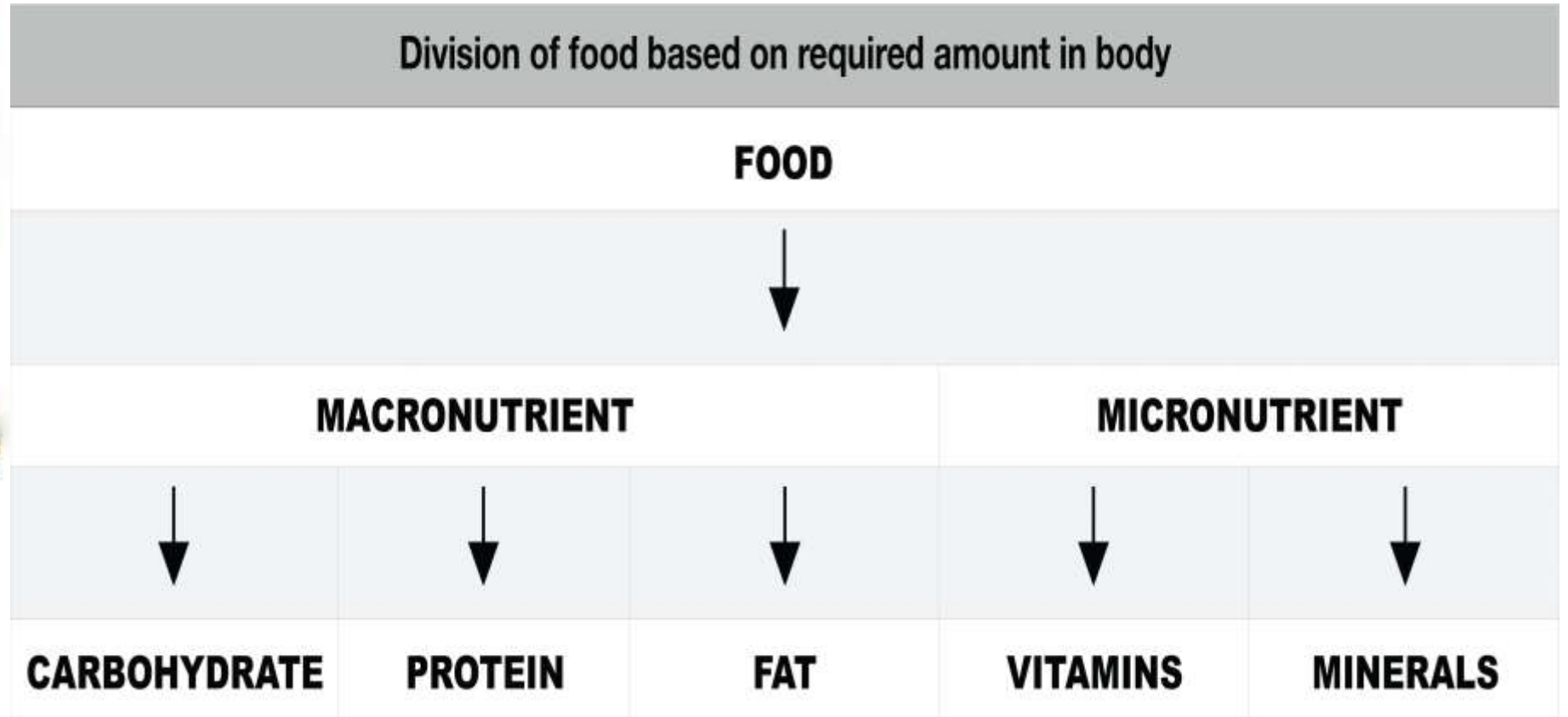
Vitamins are found in all fruits and vegetables. They are an essential for regulating and maintaining the immune system.



7 WATER

Water is necessary for digestive processes. It maintains the body pH at the right level and helps in the sustenance of body fluids.

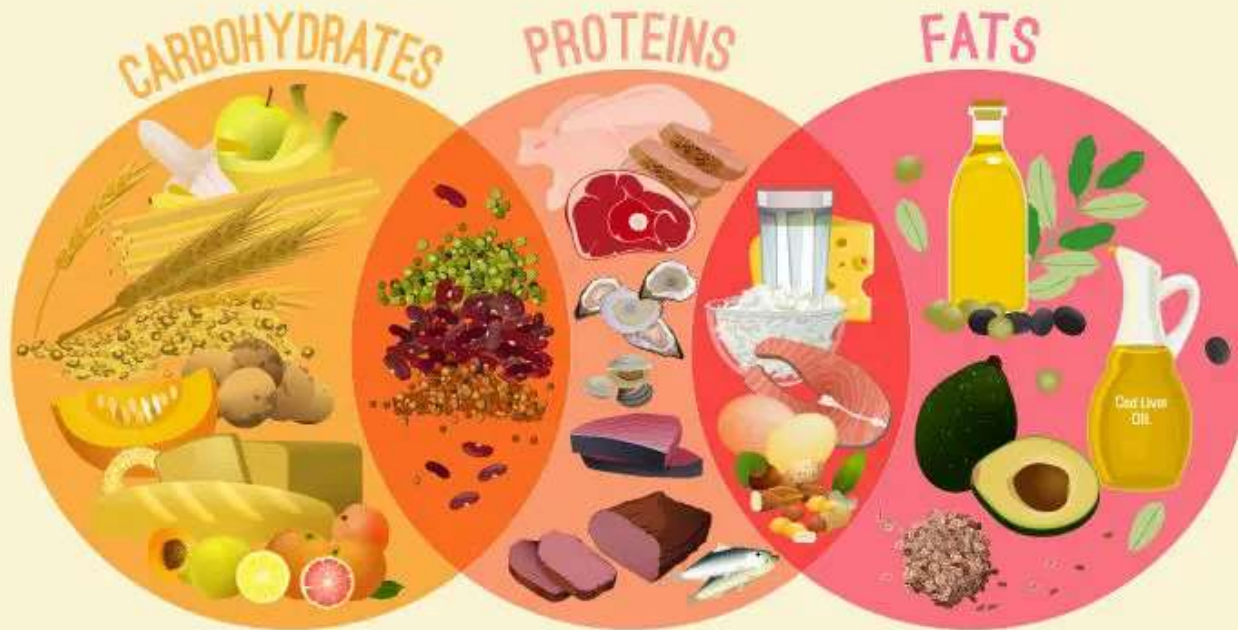




Based on recent studies the importance of dietary **fibre** has gained popularity as the 4th macro-nutrient.

MACRONUTRIENTS

A SIMPLE GUIDE TO MACROS



- Each **macronutrient** is incredibly important for your body to function optimally. It's crucial that you get enough carbs, protein, and fat by eating a balanced diet comprising a variety of foods.
- Specifically, the United States Department of Agriculture (USDA) Dietary Guidelines recommend these Acceptable Macronutrient Distribution Ranges (AMDR) for adults:
- **Carbs:** 45–65% of your daily calories
- **Protein:** 10–35% of your daily calories
- **Fat:** 20–35% of your daily calories

However, individual needs vary.

Micronutrients are the essential components of our diet that are required in much smaller amounts. There are approximately 53 essential micronutrients. The body doesn't make any of these on its own, so we have to maintain a proper micronutrient intake. Together, they are extremely important for the proper functioning of the body. Their main function is to conduct chemical reactions in the body. They do not provide any kind of energy to our body.

Micronutrients include vitamins and minerals (water-soluble vitamins, fat-soluble vitamins, macrominerals and trace minerals). They're critical for several important functions in your body and must be consumed from food.

MICRONUTRIENTS



Minerals



Vitamins



- **Carbohydrates:** They provide you with energy for daily tasks and are the primary fuel source for your brain's high energy demands. **Fiber** is a special type of carbohydrates that helps promote good digestive health. Carbohydrates can be gotten from food like amala, rice, bread, corn, yam, potato, fibers, etc.
- **Protein:** It has many roles in the body. It helps repair and build your body's tissues, allows metabolic reactions to take place and coordinates bodily functions. Examples are meat, beans, fish, soya beans, eggs, peanuts, cheese, chicken.
- **Fats:** They provide energy for living organisms, insulate body organs, and transport fat-soluble vitamins through the blood. Examples are palm oils, groundnuts oil, butter, margarine, sardine, pork, egusi oil, cod liver oil
- **Vitamins:** They help shore up bones, heal wounds, and bolster your immune system. They also convert food into energy, and repair cellular damage.
- **Minerals:** It helps in keeping bones, muscles, heart, and brain working properly. Minerals are also important for making enzymes and hormones. Examples are cereals, bread, meat, fish, milk, dairy, nuts, fruit (especially dried fruit) and vegetables.
- **Water:** It Regulates body temperature, moistens tissues in the eyes, nose and mouth. It also protects body organs and

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- It is important to maintain a proper balance of the **macro & micronutrients**. The deficiency of macronutrients can cause reduced stamina by depletion of the body store. Also, the excess of the same can cause obesity & other chronic degenerative diseases, such as CHD or diabetes. The scarcity of micronutrient such as Vitamin- A, E and Iron can cause night blindness or reproductive damages or anaemia and the excess can cause allergy or intolerance in the body.



A Guidelines To Good Health And Nutrition

Current medicine feel proper nutrition is a vital part of your health care prescription. This includes weight loss, if necessary, and eating a balanced diet. Some general principles to consider are as follows:

What to Eat

- Think of **food as medication**. It is the single most important thing you can control when it comes to your health. For most patients eating properly is more important than any medication your doctor will prescribe.
- Eat whole foods as nature made them without artificial additives and preservatives.
- Eat **vegetables and fresh fruits**, whole grains (wheat, oatmeal, farro, quinoa), and legumes (beans, chickpeas, lentils). Vegetables are a great source of protein and good carbohydrates, they have little if any fat. They are also a good source of dietary fiber and you need 35 grams of fiber daily. In addition, fiber has been reported to reduce the risk of colon cancer, obesity, cardiovascular disease, and diabetes. It is important to note that meat, dairy products, and eggs have no fiber. Both fruits and vegetables contain many phytochemicals (micronutrients that can reduce the risk of cancer). Eat whole fruit rather than drinking fruit juice or fruit canned in syrup.
- Vegetables and fruit are much less calorie-dense than meat and dairy products.
- Carbohydrates typically make up a large percentage of our daily caloric intake and are not bad in and of themselves. Eat carbohydrates found in fresh and cooked vegetables, nuts, legumes, raw fruits, and **whole-grains**.

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- **Fiber** is a critical nutrient that is severely deficient in most American diets -- 97% do not meet the recommended goal of 31.5 gms per day. Fiber improves stool bulk and promotes regular bowel movements. In addition, fiber has been reported to reduce the risk of colon cancer, obesity, cardiovascular disease, and diabetes. It is important to note that meat, dairy products, and eggs have no fiber. Good sources of fiber include:

- Green leafy vegetables
- Whole grains
- Legumes
- Certain fruits



What to Limit

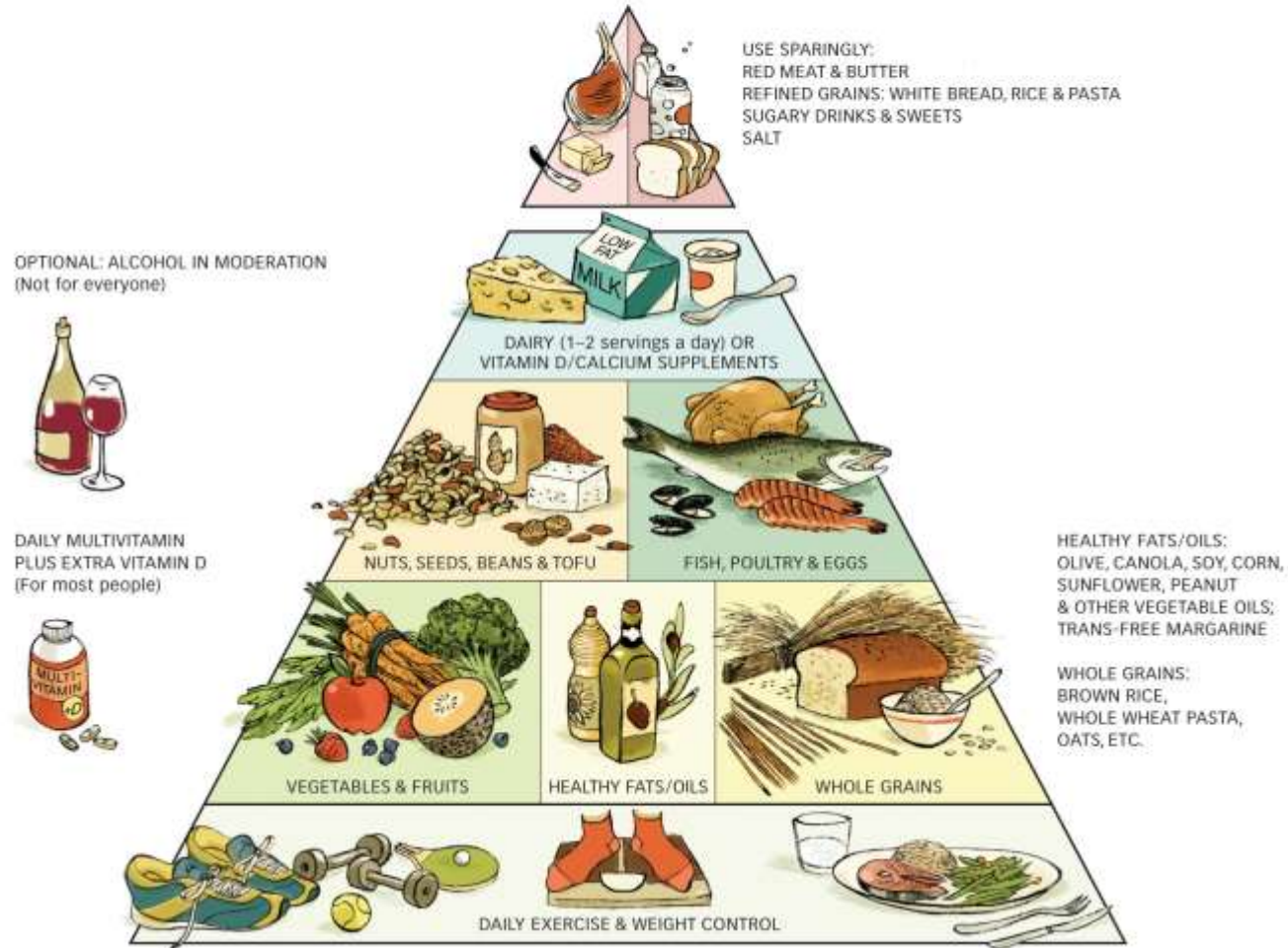
- **Limit meat** intake especially processed meats like salami, hot dogs, ham, beef jerky, and canned meat. The World Health Organization has categorized processed meats as Group 1 carcinogen (same category as tobacco smoking). Overall, meat should represent a relatively small proportion of your daily caloric intake.
- **Limit refined carbohydrates** found in candy, bagels, desserts, sugary cereals, non-whole grain pasta, and breads. Limit processed foods including fast foods, microwave meals, pizza, potato chips, and bacon. Sugar and processed foods have an adverse effect on your immune system, which can make you more susceptible to disease and infection. These foods increase inflammation throughout the body. In contrast, whole food plant-based foods are anti-inflammatory and increase good gut bacteria boosting your immune system.
- **Limit salt intake.** The American Heart Association recommends that salt intake be limited to 1,500 - 2,300 mg of salt per day. High blood pressure and other cardiovascular diseases are associated with excessive salt intake.



- Many different eating patterns can be successful. You may need to try several of these to find something that works for you. Choose a plan to be a lifelong change rather than a crash diet for several months but not sustainable. Be mindful of the food you are eating. Eat to care for and fuel your body.
- **Do not forget be active.** **Exercise** is a crucial part of maintaining good health. It is important even if weight loss is not necessary. Exercise can help control blood pressure, reduce the risk of diabetes, and improve cardiovascular fitness. At a minimum, you should do something that makes you “huff and puff” for 30 minutes 3 times per week. Daily exercise is best.

THE HEALTHY EATING PYRAMID

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What is modern theory of nutrition?

The theory of balanced nutrition in the modern form is **not a theory, but a paradigm**, that is, a set of theories, techniques and ways of thinking. She is one of the most beautiful creations of the human mind, one of his greatest achievements in practical and humanistic consequences.



The classical theory of balanced nutrition can be reduced to **several fundamental postulates**:

1. nutrition supports the molecular composition of the body and reimburses its energy and plastic costs;
2. ideal food is the food, in which the intake of nutrients as accurately as possible (by time and composition) corresponds to their expenditure;
3. the supply of nutrients to the blood is provided by the destruction of food structures and the absorption of nutrients necessary for metabolism, energy and plastic needs of the body;
4. food consists of several components, different in physiological meaning - nutrients, ballast substances (from which it can be purified) and harmful (toxic) substances;
5. the value of a food product is determined by the content and ratio of amino acids, monosaccharides, fatty acids, vitamins and some salts in it;
6. the utilization of food is carried out by the body itself.

YOU ARE

WITH THAT

YOU EAT

You Are What You Eat.

Every month your skin replaces itself and your body makes new cells from what you eat.



Eat Smart, Be Smart.

 KAISER PERMANENTE.

https://www.youtube.com/watch?v=Gmh_xMMJ2Pw&t=2s