وزارة التعليم العالي والبحث العلمي
الجامعة التقنية الجنوبية
المعهد التقني العمارة
قسم تقنيات التمريض

الحقيبة التدريسية لمادة

التغذية و التغذية العلاجية
الصف الثاني

تدريسي المادة
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الفصل الدراسي الثاني

جدول مفردات مادة التغذية و التغذية العلاجية

المفردات	الاسبوع
Carbohydrates	1
Protein	2
Vitamins	3
Lipids	4
Recommended Dietary Allowances (RDA)	5
Therapeutic Diets	6
Obesity, under nutrition and eating disorder	7
Diet in GIT disorder	8
Nutritional therapy of Diabetes Mellitus	9
Nutrition in Renal Disorder	10
Nutrition during pregnancy and lactation	11
Nutrition in infancy and childhood	12
Diet therapy for cardiac and hypertention patient	13
Diet therapy for patient with renal disorder	14
Diet therapy for cancer patient	15

الهدف من دراسة مادة التغذية و التغذية العلاجية (الهدف العام):

تهدف دراسة مادة **التغذية و التغذية العلاجية** للصف الثاني الى:

1) التعرف على اهم المكونات الاساسية للغذاء.
2) التعرف على اهمية التغذية الصحية و السليمة.
3)التعرف على اهم الامراض الناتجة من الاختلال في التوازن الغذائي و كيفية علاجها.

الفئة المستهدفة:

طلبة الصف الثاني / قسم تقنيات التمريض.

التقنيات التربوية المستخدمة:

1. سبورة واقلام
2. السبورة التفاعلية
3. عارض البيانات Data Show
4. جهاز حاسوب محمول Laptop

الاسبوع الأول

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

1. what are Carbohydrates.
2. Types of Carbohydrates.
3. Biological role of carbohydrates.
4. Deficiency Diseases.
5. Inborn errors and metabolic disorders.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

1. أنشطة تفاعلية صفية
2. أسئلة عصف ذهني
3. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

1. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
2. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).
3. التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

عنوان المحاضرة: Carbohydrates

Carbohydrates are one of the three main macronutrients (along with proteins and fats) and are a primary source of energy for your body. They are found in foods like bread, pasta, rice, fruits, vegetables, and dairy products.

Carbohydrates can be categorized into three main types:
1. Sugars: Simple carbs found in foods like fruits, milk, and sweets.
2. Starches: Complex carbs found in foods like bread, potatoes, and grains.
3. Fiber: A type of complex carbohydrate that the body can't digest, but it helps with digestion and maintaining blood sugar levels. It's found in foods like vegetables, fruits, legumes, and whole grains.

Your body breaks down carbohydrates into glucose (sugar), which is then used for energy.

Types of Carbohydrates:

Simple Carbohydrates (quickly digested and absorbed):
1. Fruits: Apples, bananas, berries, oranges, etc.
2. Milk and Dairy Products: Milk, yogurt, and other dairy products contain a natural sugar called lactose.
3. Sweeteners: Table sugar, honey, syrups, and other processed sugars (though these are typically less nutritious).
4. Processed Foods: Cakes, cookies, candies, and soft drinks (often high in refined sugars).

Complex Carbohydrates (take longer to digest and provide more sustained energy):
1. Whole Grains: o Oats, brown rice, quinoa, barley, and whole wheat. o Whole grain breads and pasta.
2. Starchy Vegetables: o Potatoes, sweet potatoes, corn, peas, and squash.
3. Legumes: o Lentils, beans (black beans, kidney beans) and peas.
4. Vegetables: o Broccoli, cauliflower, and other non-starchy veggies (these contain fiber, a type of carb).
5. Nuts and Seeds: o Almonds, peanuts, chia seeds, and flax seeds (these also provide healthy fats and protein).

Fiber (a type of carbohydrate that's important for digestion):

- Vegetables: Carrots, spinach, Brussels sprouts, and other leafy greens.
- Whole Grains: Brown rice, oats, barley.
- Fruits: Apples, pears, berries, and bananas.
- Legumes: Beans, lentils, and peas.

Biological role of carbohydrates:

1.Primary Source of Energy: • Fuel for Cells: Carbohydrates are the body's preferred source of energy, especially for the brain, muscles, and red blood cells. When consumed, they are broken down into glucose, which is then used by cells for energy. • Storage for Energy: Carbohydrates can be stored as glycogen in the liver and muscles. Glycogen acts as a reserve source of energy, which can be accessed when blood glucose levels drop (e.g., between meals or during exercise).

2. Brain Function: • Glucose for the Brain: The brain relies heavily on glucose for energy. It uses about 20% of the body's daily energy needs, even though it makes up only 2% of body weight. Glucose is critical for cognition, concentration, and overall brain activity.

3.Fat Metabolism: • Facilitates Fat Oxidation: Carbohydrates play a role in fat metabolism. In the absence of sufficient carbohydrates, the body can enter a state called ketosis, where it breaks down fat for energy. However, carbohydrates are required to help metabolize fat efficiently. Without enough carbs, fat metabolism is incomplete.

4.Regulation of Blood Sugar: • Insulin Response: Carbohydrates, particularly those with a high glycemic index, can trigger the release of insulin to regulate blood sugar levels. This helps maintain energy balance and keeps blood sugar levels within a healthy range. • Prevention of Hypoglycemia: Regular consumption of carbs helps prevent low blood sugar (hypoglycemia), which can cause symptoms like dizziness, fatigue, and confusion.

5.Dietary Fiber: • Digestive Health: Fiber, a type of carbohydrate that the body can't digest, plays a critical role in digestive health. It promotes regular bowel movements, helps prevent constipation, and supports gut health. • Blood Sugar Control: Soluble fiber helps slow the absorption of glucose, which can stabilize blood sugar levels. • Cholesterol Regulation: Fiber can help reduce cholesterol levels, thus lowering the risk of heart disease.

6.Cell Structure and Signaling: • Glycoproteins and Glycolipids: Carbohydrates are part of the structure of glycoproteins and glycolipids, which are essential for cell recognition, immune function, and the proper functioning of cell membranes. • Energy for Immune Function: Some carbohydrates are involved in immune signaling and help protect against infections.

7.Osmotic Regulation: • Carbohydrates help maintain fluid balance in the body. For example, glucose and other sugars help regulate osmotic pressure, which keeps cells hydrated and helps the body manage fluid distribution.

8.Heat Production: • Carbohydrates generate heat during metabolism, which contributes to maintaining body temperature, especially during physical activity or cold environments.

Deficiency Diseases:
1. Hypoglycemia (Low Blood Sugar): • Cause: This can happen when your blood glucose levels drop too low, often due to insufficient carbohydrate intake or an imbalance between food intake and insulin levels. • Symptoms: Symptoms include dizziness, weakness, confusion, fatigue, shakiness, and even fainting in severe cases. • Treatment: Eating carbohydrates, such as fruit or sugary foods, can raise blood sugar levels quickly to alleviate symptoms.

2. Ketoacidosis (from very low carbohydrate intake): • Cause: When carbohydrate intake is extremely low (as in very low-carb diets or during starvation), the body shifts to burning fat for fuel, producing ketones as a byproduct. While this is a normal response, excessive buildup of ketones can lead to ketoacidosis. • Symptoms: Symptoms include nausea, vomiting, deep breathing (Kussmaul respirations), fruity-smelling breath, confusion, and even coma if not treated. • At Risk: This is more common in people with diabetes, especially if they don't have enough insulin to regulate blood glucose levels properly.

3. Glycogen Storage Diseases: • Cause: These are inherited disorders that impair the body’s ability to store or release glycogen (the stored form of glucose). This can lead to muscle weakness, hypoglycemia, and poor growth. • Examples: o Von Gierke disease: A disorder where the body can't release glucose from glycogen, leading to low blood sugar. o McArdle disease: A disorder affecting muscles, where glycogen can't be used effectively during exercise, leading to muscle pain and weakness.

Inborn errors and metabolic disorders:

1.Galactose Metabolism Disorders: • Classic Galactosemia: Caused by a deficiency of the enzyme galactose-1-phosphate uridylyltransferase (GALT), leading to the inability to metabolize galactose, a sugar found in milk. This can result in liver damage, cataracts, and developmental delays if not treated early by restricting galactose intake.

2. Lactase Deficiency (Lactose Intolerance): Although not typically classified as an inborn error of metabolism in a genetic sense (as it's more related to decreased enzyme activity), lactase deficiency is a common condition where the enzyme lactase is insufficient to break down lactose, a sugar in milk. This leads to digestive issues like bloating, diarrhea, and gas upon the consumption of lactose-containing foods.

الاسبوع الثاني

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

1. what are protein.
2. Types of protein.
3. Biological role of protein.
4. Deficiency Diseases.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

4. أنشطة تفاعلية صفية
5. أسئلة عصف ذهني
6. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

4. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
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عنوان المحاضرة: Protein

Proteins are essential macromolecules made up of chains of smaller units called amino acids. These amino acids link together through peptide bonds to form polypeptides, which fold into specific shapes to create functional proteins.
There are 20 different amino acids that can be used to make proteins, and they are categorized into two main types:

Essential Amino Acids (must be obtained through diet): These are the amino acids that your body cannot synthesize on its own, so they need to be provided through the foods you eat. 1. Histidine 2. Isoleucine 3. Leucine 4. Lysine 5. Methionine 6. Phenylalanine 7. Threonine 8. Tryptophan 9. Valine

Non-Essential Amino Acids (can be made by the body):
These amino acids are not required from the diet because your body can produce them.
1. Alanine 2. Arginine (conditionally essential—can become essential in certain situations like illness or stress) 3. Asparagine 4. Aspartic Acid 5. Cysteine (conditionally essential under certain conditions) 6. Glutamic Acid 7. Glutamine (conditionally essential during periods of stress or illness) 8. Glycine 9. Proline (conditionally essential in some cases) 10. Serine 11. Tyrosine (can be synthesized from phenylalanine)

Sources of protein:

Animal-Based Protein Sources: These provide complete proteins, meaning they contain all nine essential amino acids. 1-Meat 2-Fish and Seafood: 3-Eggs 4-Dairy Products: 5-Poultry

Plant-Based Protein Sources:
These may be incomplete proteins (lacking one or more essential amino acids), but when combined properly, they can provide all essential amino acids. 1- Legumes 2- Nuts and Seeds 3- Quinoa: A complete plant protein containing all nine essential amino acids. 4- Whole Grains

Protein Supplements: If you're unable to meet your protein needs through food alone, you might consider supplements such as: • Whey protein (from milk). • Casein protein (from milk).
• Plant-based protein powders (like pea, soy, or rice protein).

Biological roles:

1. Structural Support: • Collagen (found in skin, bones, tendons, and cartilage) provides structural support. • Keratin (found in hair, nails, and skin) contributes to the structural integrity of these tissues.
2. Enzyme Function: • Enzymes are proteins that catalyze (speed up) chemical reactions in the body. These include digestive enzymes like amylase (which breaks down starch) and lipase (which breaks down fats). • Enzymes also play a role in metabolism, DNA replication, and cell repair.
3. Hormonal Regulation: • Some proteins function as hormones, which are chemical messengers that regulate various physiological processes. Examples include: o Insulin (regulates blood sugar) o Growth hormone (stimulates growth and development) o Thyroid hormones (regulate metabolism)
4. Immune System Function: • Antibodies (or immunoglobulins) are proteins that recognize and neutralize foreign invaders like bacteria, viruses, and toxins. • Complement proteins help the immune system by promoting inflammation and helping to destroy pathogens.
5. Transport and Storage: • Hemoglobin is a protein in red blood cells that carries oxygen from the lungs to the tissues and carbon dioxide back to the lungs for exhalation. • Myoglobin in muscles stores oxygen for use during muscle contraction. • Transport proteins like albumin help transport molecules such as fatty acids, hormones, and drugs through the bloodstream.
6. Movement: • Actin and myosin are proteins that interact in muscle fibers to allow for muscle contraction and movement. • Other proteins help cells and organelles move within the body, like dynein and kinesin in cellular transport.
7. Cell Communication: • Many proteins, such as receptors, are involved in cellular signaling. Receptor proteins on the surface of cells can receive signals (like hormones) and trigger responses inside the cell, allowing the body to respond to environmental changes.
8. Energy Source: • While proteins are not the body's primary energy source (that role goes to carbohydrates and fats), they can be broken down into amino acids and used for energy when necessary, especially during periods of starvation or intense exercise.
9. DNA Replication and Repair: • Proteins are involved in the process of DNA replication and repair, ensuring genetic information is accurately passed on during cell division. Key proteins like DNA polymerase and ligase are involved in these processes.
10. Acid-Base Balance: • Proteins help maintain the body's pH balance by acting as buffers. Hemoglobin, for instance, can help maintain a stable pH in the blood by binding to hydrogen ions.
11. Cellular Growth and Repair: • Proteins are essential for building and repairing tissues. Fibroblasts (protein-producing cells) help repair tissues after injury or damage, and proteins like collagen are key components of wound healing.

Metabolism of protein:

1. Protein Digestion and Absorption • In the Stomach: Protein digestion begins in the stomach, where pepsin, an enzyme, breaks down large protein molecules into smaller polypeptides. The acidic environment of the stomach (due to gastric acid) helps activate pepsin and aids in the breakdown of proteins. • In the Small Intestine: The partially digested proteins are further broken down by enzymes secreted by the pancreas, including trypsin and chymotrypsin, into smaller peptides and amino acids. • Absorption: The amino acids and small peptides are absorbed through the walls of the small intestine into the bloodstream. From there, they are transported to various tissues in the body.

2. Amino Acid Pool Once absorbed, the amino acids enter a circulating "amino acid pool" in the blood, which is available for the body's immediate and ongoing needs. The pool allows the body to use amino acids for: • Protein synthesis (building new proteins) • Energy production (if needed) • Conversion into other molecules (like neurotransmitters, hormones, etc.)

3. Protein Synthesis • Transcription and Translation: In cells, amino acids are assembled into proteins through the processes of transcription (copying genetic information from DNA into mRNA) and translation (assembling amino acids into protein chains based on the mRNA sequence). This occurs in the ribosomes of the cell. • The body uses the amino acids to build proteins needed for various functions, including enzymes, hormones, muscle tissue, and immune proteins.

4. Protein Breakdown (Catabolism) • Proteins are continuously turned over in the body, meaning old or damaged proteins are broken down and replaced. Proteolysis is the process through which proteins are degraded into amino acids, which can then be recycled for new protein synthesis or used for other functions.

5. Amino Acid Catabolism When amino acids are not needed for protein synthesis, they undergo catabolism (breakdown). The key steps include: • Deamination: This is the removal of the amino group (-NH2) from the amino acid. The amino group is typically converted into ammonia (NH3), which is then converted into urea in the liver (through the urea cycle) and excreted by the kidneys in urine. • The remaining carbon skeleton (without the amino group) can be used in several ways: o It can be converted into glucose (via gluconeogenesis) or fat (via lipogenesis) for energy storage. o It can enter the citric acid cycle (Krebs cycle) to be used for energy production (ATP).

6. Excretion of Nitrogen • The nitrogen from the amino acids (after deamination) is toxic in its free form. Therefore, the body must excrete it safely. As mentioned earlier, the liver converts ammonia into urea, which is less toxic. Urea is then transported to the kidneys and excreted in urine.

7. Protein Turnover • Protein turnover refers to the continuous process of protein synthesis and degradation in the body. The rate of protein turnover can vary by tissue type. For example, muscle tissue has a slower turnover rate than enzymes or other smaller proteins.

8. Energy Production from Proteins • When carbohydrate and fat sources are insufficient, such as during fasting or prolonged exercise, proteins can be broken down for energy. However, this is not the body's primary choice for energy, as protein is more valuable for tissue repair and function. • Amino acids can enter the citric acid cycle for ATP production, but this occurs only when other energy sources are scarce.

Common deficiency and disorder of protein:

1. Protein-Energy Malnutrition (PEM) Protein-energy malnutrition occurs when there is insufficient intake of both protein and calories. It is commonly seen in developing countries, but can also occur in individuals with eating disorders or chronic illnesses. There are two primary forms of PEM: • Kwashiorkor: o Cause: This is primarily a protein deficiency, despite adequate caloric intake (often from carbohydrates). o Symptoms: ♣ Swelling (edema), especially in the legs and abdomen ♣ Irritability ♣ Fatigue ♣ Hair loss or discoloration ♣ Apathy ♣ Stunted growth in children ♣ Skin rashes or dermatitis ♣ Enlarged liver (hepatomegaly) o Risk: Most common in children, particularly those who are weaned off breast milk too early and are not provided with enough protein-rich foods.

2. Amino Acid Deficiency • Cause: Insufficient intake or imbalance of essential amino acids. • Symptoms: o Poor growth and development (in children) o Muscle wasting o Weakened immune function o Edema

3.Hypoalbuminemia • Cause: Low levels of albumin, a major protein in the blood, often due to malnutrition, liver disease, kidney disease, or severe burns. • Symptoms: o Edema (swelling, especially in the legs and abdomen) o Fatigue o Weakness o Impaired wound healing • Risk: People with liver disease, chronic kidney disease, or malnutrition are most at risk.

4.Sickle Cell Disease • Cause: A genetic disorder where the hemoglobin protein in red blood cells is abnormal, leading to misshapen (sickle) red blood cells that cannot carry oxygen efficiently and are prone to breaking down. • Symptoms: o Painful episodes (called crises) o Anemia o Fatigue o Swelling in the hands and feet o Increased risk of infection o Delayed growth in children • Management: Involves pain management, blood transfusions, and medications like hydroxyurea. Bone marrow or stem cell transplants may be considered in some cases.

5.Liver Diseases Affecting Protein Synthesis • The liver is essential for producing many proteins, including albumin and clotting factors. Liver conditions (such as cirrhosis or hepatitis) can impair protein production, leading to: o Edema (swelling) o Ascites (fluid buildup in the abdomen) o Coagulation disorders (bleeding or clotting problems) o Jaundice (yellowing of the skin and eyes)

6. Proteinuria (Excess Protein in Urine) • Cause: Damage to the kidneys (often due to conditions like diabetes or high blood pressure) can cause proteins like albumin to leak into the urine. • Symptoms: o Swelling (edema) o Foamy urine (due to the high protein content) o Fatigue • Management: Treating the underlying condition, managing blood pressure, and reducing dietary protein intake in some cases.

الاسبوع الثالث

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

1. what are Vitamins.
2. Types of Vitamins.
3. Source of Vitamins.
4. Function of Vitamins.
5. Deficiency Diseases.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

7. أنشطة تفاعلية صفية
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Vitamins are essential organic compounds that our bodies need in small amounts to function properly. They play key roles in various bodily functions, including metabolism, immune function, and tissue repair. Vitamins can be obtained from food, and in some cases, from supplements, as the body either can't produce them on its own or doesn't produce enough of them.

Vitamins are classified into two main types based on how they are absorbed, stored, and used by the body:

1. Fat-Soluble Vitamins:

These vitamins are absorbed with the help of dietary fat and are stored in the body's fatty tissues and liver. They are not excreted in urine, so the body can accumulate them over time, which can sometimes lead to toxicity if taken in excessive amounts.

- **Vitamin A:** Important for vision, immune function, and skin health.
- **Vitamin D:** Helps the body absorb calcium for strong bones and teeth. It also supports immune function.
- **Vitamin E:** Acts as an antioxidant, protecting cells from damage, and is important for immune health.
- **Vitamin K:** Essential for blood clotting and bone health.

2. Water-Soluble Vitamins:

These vitamins dissolve in water and are not stored in the body. They are excreted through urine, which means the body needs a regular supply of them. Because they are not stored, toxicity from these vitamins is less common than with fat-soluble vitamins.

- **Vitamin C:** Known for its role in immune function, wound healing, and the maintenance of healthy skin, blood vessels, and bones.
- **B Vitamins:** A group of eight vitamins that help with energy production, metabolism, and the proper functioning of the brain and nervous system. They include:
    - **B1 (Thiamine)**
    - **B2 (Riboflavin)**
    - **B3 (Niacin)**
    - **B5 (Pantothenic Acid)**
    - **B6 (Pyridoxine)**
    - **B7 (Biotin)**
    - **B9 (Folate/Folic Acid)**
    - **B12 (Cobalamin)**

Sources of Vit. :

Fat-Soluble Vitamins:

1. **Vitamin A**:
    - **Animal sources**: Liver, fish liver oil, dairy products (milk, cheese, butter), eggs

2. **Vitamin D**:

- **Sunlight**: The body produces Vitamin D when the skin is exposed to sunlight.
- **Food sources**: Fatty fish (salmon, mackerel, sardines), cod liver oil, fortified milk, fortified cereals, egg yolks, cheese

3.**Vitamin E**:

- **Nuts and seeds**: Almonds, sunflower seeds, hazelnuts
- **Vegetable oils**: Sunflower oil, wheat germ oil, safflower oil
- **Leafy greens**: Spinach, Swiss chard, kale
- **Fruits**: Avocados

4. **Vitamin K**:

- **Leafy greens**: Kale, spinach, broccoli, collard greens
- **Animal sources**: Liver, meat

Water-Soluble Vitamins:

1. **Vitamin C**:
    - **Fruits**: Oranges, strawberries, kiwi, guava, papaya, lemons
    - **Vegetables**: Bell peppers, broccoli, Brussels sprouts, spinach, kale, tomatoes
2. **Vitamin B1 (Thiamine)**:
    - **Whole grains**: Brown rice, oats, whole wheat bread, barley
    - **Meat**: Pork, liver
    - **Legumes**: Lentils, beans
    - **Seeds**: Sunflower seeds
3. **Vitamin B2 (Riboflavin)**:
    - **Dairy**: Milk, yogurt, cheese
    - **Meat**: Liver, eggs
    - **Leafy greens**: Spinach, broccoli
    - **Whole grains**: Fortified cereals, bread
4. **Vitamin B3 (Niacin)**:

- **Meat**: Chicken, turkey, beef, pork
- **Fish**: Tuna, salmon
- **Legumes**: Lentils, beans
- **Whole grains**: Brown rice, whole wheat bread, fortified cereals

5. **Vitamin B5 (Pantothenic Acid)**:
   - **Meat**: Chicken, beef, pork
   - **Eggs**
   - **Whole grains**: Oats, brown rice, whole wheat bread
   - **Avocados**
   - **Legumes**: Lentils, split peas
6. **Vitamin B6 (Pyridoxine)**:
   - **Poultry**: Chicken, turkey
   - **Fish**: Salmon, tuna
   - **Potatoes**: Sweet potatoes, white potatoes
   - **Bananas**
   - **Fortified cereals**: Whole grains
7. **Vitamin B7 (Biotin)**:
   - **Egg yolks**
   - **Nuts and seeds**: Almonds, sunflower seeds, walnuts
   - **Legumes**: Lentils, chickpeas, peanuts
   - **Whole grains**: Oats, barley
   - **Cauliflower, mushrooms**
8. **Vitamin B9 (Folate or Folic Acid)**:
   - **Leafy greens**: Spinach, kale, lettuce
   - **Legumes**: Lentils, chickpeas, beans
   - **Citrus fruits**: Oranges, grapefruits
   - **Fortified cereals** and **bread**
   - **Avocados**
9. **Vitamin B12 (Cobalamin)**:
   - **Animal sources**: Meat (beef, lamb, pork), poultry, fish (salmon, tuna, mackerel)
   - **Dairy products**: Milk, cheese, yogurt
   - **Eggs**
   - **Fortified foods**: Plant-based milk, cereals (for vegans and vegetarians)

function of vitamins

Fat-Soluble Vitamins:

- **Vitamin A**:
  - **Vision**: Supports the production of rhodopsin, a protein in the retina for low-light vision.
  - **Immune function**: Helps maintain the integrity of the skin and mucous membranes, boosting the immune system's defenses.
  - **Cell growth**: Essential for growth, development, and differentiation of cells.
- **Vitamin D**:
  - **Bone health**: Regulates calcium and phosphorus levels to promote bone and teeth mineralization.
  - **Immune system support**: Enhances the immune system and helps reduce the risk of chronic diseases.
  - **Muscle function**: Supports muscle strength and function.
- **Vitamin E**:
  - **Antioxidant**: Protects cells from oxidative stress caused by free radicals, reducing cellular damage.
  - **Immune function**: Supports the immune system by enhancing the activity of immune cells.
  - **Skin health**: Helps maintain healthy skin and aids in wound healing.
- **Vitamin K**:
  - **Blood clotting**: Essential for the synthesis of clotting factors in the blood, preventing excessive bleeding.
  - **Bone health**: Involved in bone mineralization and the regulation of calcium in the bones.
  - **Cardiovascular health**: Helps prevent the calcification of blood vessels, supporting heart health.

Water-Soluble Vitamins:

1. **Vitamin C**:
   - **Collagen synthesis**: Crucial for the formation of collagen, which is important for skin, cartilage, blood vessels, and bones.
   - **Antioxidant**: Protects the body from free radical damage.
   - **Immune function**: Strengthens the immune system by supporting white blood cells and fighting infections.
   - **Iron absorption**: Enhances the absorption of non-heme iron from plant-based foods.
2. **Vitamin B1 (Thiamine)**:
   - **Energy metabolism**: Helps the body convert carbohydrates into energy, supporting cellular energy production.
   - **Nervous system health**: Supports the nervous system and brain function by helping in neurotransmitter production.
3. **Vitamin B2 (Riboflavin)**:
   - **Energy production**: Involved in the metabolism of fats, proteins, and carbohydrates to produce energy.
   - **Antioxidant**: Helps neutralize oxidative stress in cells.
   - **Skin, eyes, and mucous membranes**: Supports the health of skin, eyes, and the digestive tract lining.
4. **Vitamin B3 (Niacin)**:
   - **Energy production**: A key component of coenzymes (NAD and NADP) that are essential for energy production within cells.
   - **DNA repair**: Involved in DNA repair and the synthesis of certain hormones.
   - **Skin health**: Helps maintain healthy skin and protects against skin conditions like pellagra.
5. **Vitamin B5 (Pantothenic Acid)**:
   - **Energy metabolism**: Plays a role in converting carbohydrates, fats, and proteins into energy.
   - **Hormone production**: Involved in the synthesis of adrenal hormones (like cortisol) and coenzyme A.
   - **Wound healing**: Supports tissue repair and wound healing.
6. **Vitamin B6 (Pyridoxine)**:
   - **Amino acid metabolism**: Helps metabolize amino acids and produce neurotransmitters like serotonin, dopamine, and norepinephrine.
   - **Hemoglobin production**: Necessary for producing hemoglobin, the protein in red blood cells that carries oxygen.
   - **Immune support**: Strengthens the immune response by supporting white blood cell production.
7. **Vitamin B7 (Biotin)**:
   - **Carbohydrate, fat, and protein metabolism**: Supports the metabolism of macronutrients by aiding in the conversion of food into energy.
   - **Hair, skin, and nails health**: Often associated with promoting healthy hair, skin, and nails.
8. **Vitamin B9 (Folate or Folic Acid)**:

    - **DNA synthesis**: Vital for the formation of DNA, helping in cell division and the growth of tissues.
    - **Red blood cell production**: Works with Vitamin B12 to form healthy red blood cells.
    - **Pregnancy**: Crucial for fetal development, especially for preventing neural tube defects during early pregnancy.
9. **Vitamin B12 (Cobalamin)**:
    - **Red blood cell production**: Involved in the production of red blood cells and the prevention of anemia.
    - **Nervous system health**: Supports the health of nerve cells and the synthesis of myelin, which insulates nerve fibers.
    - **DNA synthesis**: Necessary for the proper function of the brain and the synthesis of DNA and RNA in cells.

Rickets (Vitamin D Deficiency)

- **Cause**: Insufficient Vitamin D intake or inadequate sun exposure.
- **Symptoms**:
    - Softening and weakening of bones in children, leading to deformities like bowed legs.
    - Bone pain and tenderness.
    - Growth delays.
- **Prevention**: Adequate Vitamin D through sunlight exposure, fortified foods, or supplements.

Osteomalacia (Vitamin D Deficiency)

- **Cause**: Similar to rickets, but occurs in adults due to insufficient Vitamin D.
- **Symptoms**:
    - Bone pain, muscle weakness, and tenderness.
    - Increased risk of fractures.
- **Prevention**: Adequate intake of Vitamin D and calcium.

pernicious Anemia (Vitamin B12 Deficiency)

- **Cause**: Lack of Vitamin B12, often due to malabsorption or inadequate dietary intake (particularly in vegans).
- **Symptoms**:
    - Fatigue, weakness, pale skin.
    - Numbness or tingling in hands and feet.
    - Memory problems, mood disturbances, and cognitive impairment.
- **Prevention**: B12-rich foods (meat, fish, dairy, eggs) or fortified plant-based foods for vegans.

الاسبوع الرابع

الهدف التعليمي :

1. what are Lipids.
2. Roles of Lipid.
3. Metabolism of Lipid.
4. Deficiency Diseases.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

10. أنشطة تفاعلية صفية
11. أسئلة عصف ذهني
12. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

10. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
11. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).
12. التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Fats, oils, phospholipids, and sterols are essential components of the human diet and are involved in various physiological functions. While they are important for energy, cellular structure, and hormone production, it's crucial to balance the intake of these lipids to promote overall health, emphasizing unsaturated fats, omega fatty acids, and limiting trans and excessive saturated fats.

1. Fats

Fats, or triglycerides, are a major form of stored energy in the body. They are made up of three fatty acids bonded to a glycerol molecule. Fats are classified into **saturated fats** and **unsaturated fats**:

- **Saturated fats**: Typically found in animal products (like meat, butter, and dairy) and some plant oils (e.g., coconut oil, palm oil), these fats are solid at room temperature. Overconsumption of saturated fats can raise cholesterol levels and increase the risk of heart disease.
- **Unsaturated fats**: These fats are liquid at room temperature and are found in plant-based oils (like olive oil, sunflower oil, and canola oil), nuts, seeds, and fatty fish (like salmon and mackerel). Unsaturated fats are considered heart-healthy and help improve cholesterol levels. They are further divided into:
    - **Monounsaturated fats**: Found in olive oil, avocado, and nuts.
    - **Polyunsaturated fats**: Found in fatty fish, flaxseeds, walnuts, and sunflower oil.

2. Oils

Oils are typically liquid fats that are extracted from plant sources (such as olive, canola, sunflower, and soybean oils) or animals (such as fish oils). Like other fats, oils are a concentrated source of energy and contain essential fatty acids. Certain oils (like **fish oils**) are high in **omega-3 fatty acids**, which are important for heart health, brain function, and reducing inflammation.

3. Phospholipids

Phospholipids are essential components of cell membranes. They are similar to triglycerides but have a phosphate group in place of one of the fatty acids, which gives them amphipathic properties (hydrophilic "head" and hydrophobic "tail"). Phospholipids are crucial for maintaining the integrity and fluidity of cell membranes and are involved in cell signaling and transportation across the membrane.

Phospholipids are found in:

- **Egg yolks**
- **Soybeans**

4. Sterols (Cholesterol)

Sterols are a type of lipid with a complex structure consisting of multiple rings. **Cholesterol** is the most well-known sterol and is a critical component of cell membranes. It is also the precursor for the synthesis of steroid hormones (such as estrogen, testosterone, and cortisol), vitamin D, and bile acids necessary for digestion.

There are two types of cholesterol:

- **LDL (Low-Density Lipoprotein)**: Often referred to as "bad" cholesterol, high levels of LDL cholesterol can lead to plaque buildup in arteries, increasing the risk of cardiovascular disease.
- **HDL (High-Density Lipoprotein)**: Known as "good" cholesterol, HDL helps remove excess cholesterol from the bloodstream and carries it back to the liver for processing.

Role in Human Nutrition

These nutritional lipids play crucial roles in human health:

- **Energy Source**: Fats and oils provide long-term energy storage and are an essential part of a balanced diet.
- **Essential Fatty Acids**: Omega-3 and omega-6 fatty acids are necessary for proper brain function, skin health, and inflammation control. These cannot be produced by the body and must be obtained through diet (e.g., fatty fish, flaxseeds, walnuts).
- **Hormone Regulation**: Cholesterol and other sterols are precursors to vital hormones and bile acids, supporting metabolism and reproductive health.
- **Cell Membrane Integrity**: Phospholipids are fundamental to the structure and function of every cell in the body.
- **Absorption of Fat-Soluble Vitamins**: Fats help the body absorb essential vitamins A, D, E, and K, which are important for vision, bone health, immune function, and blood clotting.

Metabolism:

1. Digestion and Absorption

The metabolism of fats begins in the digestive system, where dietary fats (mostly in the form of triglycerides) are broken down to allow for absorption:

- **In the stomach**: Fats are partially broken down by an enzyme called **lingual lipase** (released from the salivary glands) and **gastric lipase** (released from the stomach). However, the majority of fat digestion occurs in the small intestine.
- **In the small intestine**: Bile, produced by the liver and stored in the gallbladder, is released into the small intestine to emulsify fats, breaking them into smaller droplets. This increases the surface area for enzymes to act on them. The main enzyme involved is **pancreatic lipase**, which breaks triglycerides down into **monoglycerides** and **fatty acids**.
- These monoglycerides and fatty acids are then absorbed into the **intestinal cells** (enterocytes), where they are reassembled into **triglycerides**.

2. Transportation

After being reassembled into triglycerides in the intestinal cells, the fats cannot directly enter the bloodstream due to their hydrophobic nature. They are instead incorporated into **chylomicrons**, which are lipoprotein particles that transport fat through the lymphatic system into the bloodstream.

- **Chylomicrons** deliver dietary fats to various tissues in the body, including muscle and adipose (fat) tissue.

3. Storage

- **Adipose tissue**: When fats are not immediately needed for energy, they are stored in adipose tissue (fat cells). Triglycerides are stored in the form of fat droplets within these cells, ready to be broken down and used for energy when needed.
- The body uses **insulin** to regulate fat storage after meals, promoting the storage of excess calories as fat.

4. Mobilization (Fat Breakdown)

When the body needs energy (e.g., between meals, during physical activity, or during fasting), stored triglycerides in adipose tissue are broken down into their components (fatty acids and glycerol) in a process called **lipolysis**

5. Ketone Body Formation (Ketogenesis)

When carbohydrate intake is low (during prolonged fasting or a low-carb diet), the liver can convert excess acetyl-CoA from fat metabolism into **ketone bodies**. These ketones (such as acetoacetate, beta-hydroxybutyrate, and acetone) serve as an alternative fuel source for the brain and muscles when glucose is in short supply.

Disease and disorder:

1. Obesity

- Cause: Obesity is primarily caused by an imbalance between energy intake (mainly from fat and calories) and energy expenditure (through physical activity and metabolic processes). When the body stores more fat than it burns, it leads to excessive fat accumulation.
- Consequences: Obesity is a major risk factor for several chronic diseases, including type 2 diabetes, cardiovascular diseases (heart disease, stroke), hypertension (high blood pressure), and certain cancers.
- Management: Treatment typically involves lifestyle changes, such as dietary modification, increased physical activity, and in some cases, medications or surgery.

2. Atherosclerosis (Arterial Plaque Formation)

- Cause: Atherosclerosis occurs when there is an accumulation of fatty deposits (plaques) in the arteries, often due to high levels of **LDL (low-density lipoprotein) cholesterol** and saturated fats. Over time, these plaques can narrow and harden arteries, leading to restricted blood flow.
- Consequences: This can result in heart disease, stroke, and peripheral artery disease. High cholesterol levels and a diet rich in unhealthy fats contribute significantly to this condition.
- Management: Treatment typically includes medications (such as statins), lifestyle changes (e.g., reducing saturated fat intake, exercising), and, in severe cases, surgery or stent placement.

3. Dyslipidemia (Abnormal Blood Lipid Levels)

- **Cause**: Dyslipidemia refers to abnormal levels of lipids in the blood, such as high LDL cholesterol, low HDL (high-density lipoprotein) cholesterol, and elevated triglycerides. It can be caused by genetic factors, poor diet, physical inactivity, and certain medical conditions like diabetes.
- **Consequences**: This condition increases the risk of cardiovascular diseases, heart attacks, and stroke.
- **Management**: Treatment involves lifestyle changes (healthy diet, exercise) and medications to manage lipid levels, such as statins, fibrates, and omega-3 fatty acid supplements.

4. Fatty Liver Disease (Non-Alcoholic Fatty Liver Disease - NAFLD)

- **Cause**: NAFLD occurs when excess fat builds up in liver cells in individuals who consume little or no alcohol. It is often associated with obesity, insulin resistance, and metabolic syndrome.
- **Consequences**: Over time, the fat accumulation can lead to inflammation (non-alcoholic steatohepatitis, NASH), liver scarring (fibrosis), and even cirrhosis or liver failure.
- **Management**: There are no specific medications for NAFLD, but lifestyle changes such as weight loss, exercise, and a healthy diet can help manage the condition. In some cases, medications targeting insulin resistance may be prescribed.

5.Ketosis and Ketoacidosis

- **Cause**: **Ketosis** occurs when the body burns fat for fuel in the absence of sufficient carbohydrates, leading to the production of **ketone bodies**. This is often seen in low-carb or ketogenic diets. **Ketoacidosis**, on the other hand, is a dangerous condition primarily seen in people with diabetes, where an excess of ketones builds up in the blood, causing a life-threatening acid-base imbalance.
- **Consequences**:
    - **Ketosis**: In moderate amounts, ketosis is typically safe and used for energy, but prolonged or extreme ketosis can lead to nutrient deficiencies and other health risks.
    - **Ketoacidosis**: This is a medical emergency. If left untreated, it can lead to dehydration, coma, and even death.
- **Management**: For ketosis, it is important to monitor the diet and ensure adequate nutrient intake. Ketoacidosis requires immediate medical attention and insulin therapy to bring blood sugar and ketone levels under control.

الاسبوع الخامس

الهدف التعليمي :

1. RDA of adult men
2. RDA of adult women
3. RDA of children.
4. RDA of adolescents, pregnancy and breatfeeding.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

13. أنشطة تفاعلية صفية
14. أسئلة عصف ذهني
15. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

13. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
14. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).

التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

عنوان المحاضرة:Recommended Dietary Allowances (RDA)

For Adult Men:

- **Calories**: 2,000–3,000 kcal/day (depends on age, activity level)
- **Protein**: 56 grams/day
- **Fat**: 70–97 grams/day (depending on age and activity)
- **Carbohydrates**: 225–325 grams/day
- **Fiber**: 38 grams/day
- **Vitamin A**: 900 micrograms/day
- **Vitamin C**: 90 milligrams/day
- **Calcium**: 1,000–1,200 milligrams/day
- **Iron**: 8 milligrams/day
- **Magnesium**: 400–420 milligrams/day
- **Potassium**: 3,400 milligrams/day

For Adult Women:

- **Calories**: 1,800–2,400 kcal/day (depends on age, activity level)
- **Protein**: 46 grams/day
- **Fat**: 70–90 grams/day (depends on age and activity)
- **Carbohydrates**: 225–325 grams/day
- **Fiber**: 25 grams/day
- **Vitamin A**: 700 micrograms/day
- **Vitamin C**: 75 milligrams/day
- **Calcium**: 1,000–1,200 milligrams/day
- **Iron**: 18 milligrams/day (during menstruating years, decreases to 8 mg/day post-menopause)
- **Magnesium**: 310–320 milligrams/day
- **Potassium**: 2,600 milligrams/day

Children (0–18 years)

Infants (0-12 months):

- **0-6 months**:
  - **Calories**: 570 kcal/day
  - **Protein**: 9.1 grams/day
  - **Fat**: 31 grams/day
  - **Carbohydrates**: 60 grams/day
  - **Iron**: 0.27 mg/day
- **7-12 months**:
  - **Calories**: 740 kcal/day
  - **Protein**: 11 grams/day
  - **Fat**: 30 grams/day
  - **Carbohydrates**: 95 grams/day
  - **Iron**: 11 mg/day

Children (1-3 years):

- **Calories**: 1,000 kcal/day
- **Protein**: 13 grams/day
- **Fat**: 30 grams/day
- **Carbohydrates**: 130 grams/day
- **Iron**: 7 mg/day

Children (4-8 years):

- **Calories**: 1,200 kcal/day
- **Protein**: 19 grams/day
- **Fat**: 35 grams/day
- **Carbohydrates**: 130 grams/day
- **Iron**: 10 mg/day

Children (9-13 years):

- **Calories**: 1,600–2,000 kcal/day (depends on activity level)
- **Protein**: 34 grams/day
- **Fat**: 40–50 grams/day
- **Carbohydrates**: 130 grams/day
- **Iron**: 8 mg/day

Adolescents (14-18 years)

Boys (14-18 years):

- **Calories**: 2,200–3,200 kcal/day (depends on activity level)
- **Protein**: 52 grams/day
- **Fat**: 65–97 grams/day
- **Carbohydrates**: 130 grams/day
- **Iron**: 11 mg/day

Girls (14-18 years):

- **Calories**: 1,800–2,400 kcal/day (depends on activity level)
- **Protein**: 46 grams/day
- **Fat**: 60–80 grams/day
- **Carbohydrates**: 130 grams/day
- **Iron**: 15 mg/day

Pregnancy

Pregnant Women (All Trimesters):

- **Calories**: +300 kcal/day above usual intake
- **Protein**: 71 grams/day
- **Fat**: 71–97 grams/day
- **Carbohydrates**: 175 grams/day
- **Iron**: 27 mg/day
- **Calcium**: 1,000 mg/day
- **Folate**: 600 mcg/day
- **Vitamin D**: 600 IU/day

Breastfeeding

Lactating Women (0-6 months):

- **Calories**: +500 kcal/day above usual intake
- **Protein**: 71 grams/day
- **Fat**: 70–100 grams/day
- **Carbohydrates**: 210 grams/day
- **Iron**: 9 mg/day
- **Calcium**: 1,000 mg/day
- **Vitamin D**: 600 IU/day
- **Folate**: 500 mcg/day

Lactating Women (6-12 months):

- **Calories**: +400 kcal/day above usual intake
- **Protein**: 71 grams/day
- **Fat**: 70–100 grams/day
- **Carbohydrates**: 210 grams/day
- **Iron**: 9 mg/day
- **Calcium**: 1,000 mg/day
- **Vitamin D**: 600 IU/day
- **Folate**: 500 mcg/day

الاسبوع السادس

الهدف التعليمي :

1. What is therapeutic diet.
2. Types of therapeutic diet.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

16. أنشطة تفاعلية صفية
17. أسئلة عصف ذهني
18. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

15. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
16. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).

التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Therapeutic diets are special eating plans designed to help manage or treat specific health conditions or medical problems. These diets are often prescribed by healthcare providers, such as doctors or dietitians, and they aim to address the nutritional needs of a person while also promoting healing, managing symptoms, or preventing further complications. Therapeutic diets are tailored to the individual's condition and may focus on:

1. **Reducing symptoms**: Certain foods are avoided or emphasized to help control symptoms of diseases like diabetes, heart disease, or gastrointestinal issues.
2. **Promoting recovery**: A diet might be created to support healing after surgery or illness, providing essential nutrients that the body needs to recover.
3. **Balancing nutrient intake**: In conditions like kidney disease or malnutrition, specific nutrients may need to be limited or increased.
4. **Preventing complications**: For conditions like hypertension or obesity, a therapeutic diet can help prevent worsening of the condition and improve overall health.

Therapeutic adaptation of normal diet:

The therapeutic adaptation of a normal diet refers to making modifications to a typical, balanced diet in order to address specific health conditions or medical needs while still maintaining proper nutrition. The goal is to adjust the diet to manage or improve a person's health condition, without drastically changing the overall approach to healthy eating.

1. Modification of Macronutrient Ratios:

- **Carbohydrates**: For people with diabetes or insulin resistance, a therapeutic adaptation might involve reducing carbohydrate intake or focusing on low glycemic index foods to better control blood sugar levels.
- **Fats**: In the case of heart disease or high cholesterol, the diet may be adapted by reducing saturated fats and trans fats while increasing healthy fats, like those from olive oil, nuts, and avocados.
- **Proteins**: For individuals with kidney disease, protein intake may need to be adjusted (either increased or decreased) depending on the stage of the disease. In some cases, protein may need to be limited to reduce strain on the kidneys.

2. Limiting or Avoiding Certain Foods:

- **Low-sodium diets**: For those with hypertension, the normal diet might be adapted by reducing salt and processed foods to decrease sodium intake.
- **Gluten-free diets**: In individuals with celiac disease or gluten intolerance, the normal diet is adapted by eliminating gluten-containing foods, like wheat, barley, and rye, and replacing them with gluten-free alternatives.
- **Low-fat diets**: For conditions like gallbladder disease or high cholesterol, saturated fats and cholesterol-rich foods are reduced to promote better digestive health and lower cholesterol levels.

3. Increased or Decreased Specific Nutrients:

- **High-fiber diets**: For individuals with constipation or digestive issues, a therapeutic adaptation may involve increasing fiber intake by including more fruits, vegetables, and whole grains in the diet.
- **Low-protein diets**: For people with kidney disease, a low-protein diet might be implemented to reduce the burden on the kidneys, while still meeting energy needs with other nutrients.
- **Increased fluid intake**: Some individuals may require increased fluids (e.g., for kidney stone prevention or dehydration) or decreased fluids (e.g., for certain heart or kidney conditions) depending on their medical needs.

4. Specialized Therapeutic Diets:

- **Clear liquid diet**: A clear liquid diet may be used as a therapeutic adaptation for people recovering from surgery or gastrointestinal issues, where only clear liquids (broths, tea, clear juices) are consumed to provide hydration and allow the digestive system to rest.
- **Soft or pureed diet**: People with difficulty chewing or swallowing (such as after oral surgery or in conditions like dysphagia) may require a soft or pureed version of their normal diet to make eating easier and safer.

5. Balancing Micronutrients:

- **Increased vitamins and minerals**: For individuals with malnutrition or conditions like anemia, the therapeutic adaptation of the normal diet may include increasing foods rich in specific vitamins or minerals (e.g., iron, vitamin C, calcium).
- **Restricting certain nutrients**: In diseases like hypercalcemia or hyperphosphatemia (elevated calcium or phosphorus levels), the intake of foods rich in these nutrients may be restricted.

Factor considred:

When adapting a normal diet therapeutically for a specific health condition, several factors need to be considered to ensure the diet is appropriate, effective, and sustainable. These factors vary depending on the individual's condition, needs, and overall health, but common considerations include:

1. Medical Condition or Diagnosis

- The specific health condition or disease that requires the dietary change is the most important factor. For example, the dietary adjustments for someone with diabetes will be different from those for someone with heart disease or kidney problems.

2. Nutritional Requirements

- **Energy (calories)**: Depending on the condition, the energy requirements may increase or decrease. For instance, individuals recovering from surgery or illness may need more calories for healing, while someone with obesity may need to reduce calorie intake.
- **Macronutrients**: The balance of carbohydrates, proteins, and fats needs to be adjusted. For example, a low-carb diet may be recommended for diabetes, while a low-fat diet might be necessary for heart disease.
- **Micronutrients**: Some conditions require an increase or decrease in specific vitamins and minerals. For instance, someone with anemia might need more iron, while a person with kidney disease might need to restrict potassium or phosphorus.

3. Age and Life Stage

- **Children**: Pediatric therapeutic diets may require more focus on growth and development. Special attention must be paid to ensuring adequate calories, protein, vitamins, and minerals.
- **Elderly**: Older adults may have different nutritional needs, such as more protein for muscle preservation or calcium for bone health. They may also have dietary restrictions due to multiple chronic conditions.
- **Pregnancy and Lactation**: Pregnant and breastfeeding women may require increased calories, protein, and specific nutrients (e.g., folic acid, iron, calcium) to support both their health and the development of the baby.

4. Lifestyle and Activity Level

- An individual's activity level can influence their caloric and nutrient needs. Athletes or highly active individuals may require more protein and calories to support muscle repair and recovery, while sedentary individuals may need fewer calories.
- **Cultural preferences** and **food availability** also influence how therapeutic adaptations are implemented. Dietary recommendations should align with personal preferences and cultural practices to ensure adherence.

Types of therapeutic diets

1. Low-Sodium Diet

- **Purpose**: To manage high blood pressure, heart disease, kidney disease, or edema (fluid retention).
- **Characteristics**: Limits the intake of sodium, typically less than 2,300 mg per day (sometimes even less, depending on the condition). Processed foods, canned foods, salty snacks, and table salt are avoided.
- **Foods to Include**: Fresh fruits, vegetables, unsalted nuts, lean meats, and homemade meals without added salt.

2. Low-Fat Diet

- **Purpose**: To manage hyperlipidemia (high cholesterol), obesity, or gallbladder disease.
- **Characteristics**: Limits the intake of fats, especially saturated and trans fats, and emphasizes healthier fats such as those from fish, nuts, and olive oil.
- **Foods to Include**: Lean meats, low-fat dairy products, whole grains, fruits, vegetables, and foods rich in omega-3 fatty acids.

3. Low-Carbohydrate Diet

- **Purpose**: To manage diabetes, obesity, metabolic syndrome, or insulin resistance.
- **Characteristics**: Limits carbohydrate intake, especially refined carbohydrates and sugars, in favor of proteins and healthy fats.
- **Foods to Include**: Lean meats, eggs, non-starchy vegetables, and healthy fats like avocado and olive oil.

4. High-Protein Diet

- **Purpose**: To support muscle repair, wound healing, or in cases of malnutrition or weight loss (e.g., after surgery).
- **Characteristics**: Increases protein intake to promote tissue growth and repair.
- **Foods to Include**: Lean meats, poultry, fish, eggs, legumes, and dairy products.

5. Clear Liquid Diet

- **Purpose**: To provide hydration and rest the digestive system, typically used after surgery, for gastrointestinal distress, or during certain medical treatments.
- **Characteristics**: Only clear liquids are allowed, such as broths, clear juices, tea, and water. It is typically a short-term diet.
- **Foods to Include**: Clear broth, clear fruit juices without pulp, tea, black coffee, and clear gelatin.

6. Full Liquid Diet

- **Purpose**: To provide more nourishment than a clear liquid diet, often used post-surgery or for patients with difficulty swallowing.
- **Characteristics**: Includes all liquids allowed in a clear liquid diet plus milk, smooth soups, and juices with pulp.
- **Foods to Include**: Milk, cream soups, yogurt, fruit juices with pulp, and smoothies.

7. Soft Diet

- **Purpose**: To ease digestion after surgery, in the case of swallowing difficulties, or for people with gastrointestinal conditions (like ulcers).
- **Characteristics**: Includes foods that are easy to chew and digest, avoiding foods that are hard, crunchy, or spicy.
- **Foods to Include**: Cooked vegetables, soft fruits, mashed potatoes, scrambled eggs, and tender meats.

8. Renal (Kidney) Diet

- **Purpose**: To manage chronic kidney disease or end-stage kidney failure by reducing the intake of certain nutrients that the kidneys can't filter effectively.
- **Characteristics**: Limits protein, sodium, potassium, and phosphorus intake, depending on the stage of kidney disease.
- **Foods to Include**: Foods lower in potassium (such as apples and berries), low-protein options, and limited amounts of dairy.

9. Gluten-Free Diet

- **Purpose**: To treat celiac disease, non-celiac gluten sensitivity, or wheat allergies.
- **Characteristics**: Eliminates gluten-containing grains such as wheat, barley, and rye, and replaces them with gluten-free alternatives.
- **Foods to Include**: Rice, quinoa, gluten-free oats, vegetables, fruits, and gluten-free flours.

10. Diabetic Diet

- **Purpose**: To control blood sugar levels in individuals with diabetes.
- **Characteristics**: Focuses on controlling carbohydrate intake, using foods with a low glycemic index, and maintaining balanced blood sugar levels.
- **Foods to Include**: Whole grains, lean proteins, non-starchy vegetables, and fruits that have a low glycemic index (such as berries and apples).

الاسبوع السابع

الهدف التعليمي :

1. What is Obesity.
2. Causes and Treatment of Obesity.
3.What is Under nutrition, causes and treatment.
4.What is eating disorder, causes and treatment.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

19. أنشطة تفاعلية صفية
20. أسئلة عصف ذهني
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عنوان المحاضرة:Obesity, under nutrition and eating disorder

Obesity is a medical condition characterized by an excessive accumulation of body fat that can have negative effects on overall health. It is commonly measured using the Body Mass Index (BMI), where a BMI of 30 or higher typically indicates obesity. The condition can lead to a variety of serious health issues, including:

1-**Heart disease**: Obesity is a leading risk factor for cardiovascular diseases like heart attack, stroke, and high blood pressure.
2-**Type 2 diabetes**: The excess fat can make the body resistant to insulin, leading to high blood sugar levels.
3-**Joint problems**: Carrying extra weight puts stress on joints, especially the knees and hips, increasing the risk of arthritis.
4-**Sleep apnea**: Obesity is a common cause of sleep apnea, a condition where breathing repeatedly stops and starts during sleep.
5-**Certain cancers**: Obesity is associated with an increased risk of several types of cancer, including breast, colon, and liver cancer.
6-**Mental health issues**: Obesity can contribute to depression, anxiety, and low self-esteem due to both physical health concerns and social stigma.

Causes of obesity:

- **Genetics**: Family history can play a role in how the body stores fat.
- **Poor diet**: Diets high in processed foods, sugary beverages, and fats can contribute to weight gain.
- **Physical inactivity**: A sedentary lifestyle with little to no physical activity can lead to weight gain.
- **Medical conditions**: Certain conditions, such as hypothyroidism or polycystic ovary syndrome (PCOS), can increase the risk of obesity.
- **Medications**: Some medications, like antidepressants or corticosteroids, can lead to weight gain.

Treatment for obesity:

- **Diet**: Reducing calorie intake and focusing on a balanced, nutrient-rich diet can help in weight loss.
- **Exercise**: Regular physical activity, such as walking, swimming, or strength training, is essential for managing weight.
- **Behavioral changes**: Developing healthier habits, such as mindful eating and reducing stress, can support weight loss efforts.
- **Medications**: Some people may benefit from weight-loss medications prescribed by a doctor.
- **Surgery**: For those with severe obesity, bariatric surgery (like gastric bypass or sleeve gastrectomy) may be recommended.
-

Under nutrition: refers to a condition where a person doesn't receive enough nutrients to maintain their health. It occurs when there is a deficiency in the intake of energy (calories), protein, or essential vitamins and minerals. This can result from a variety of factors, such as poor dietary intake, an inability to absorb nutrients properly, or increased nutrient needs due to illness.

Types of Under nutrition:

1. **Caloric Deficiency**: When the body does not receive enough calories to meet its energy needs, leading to weight loss and muscle wasting.
2. **Protein-Energy Malnutrition (PEM)**: This includes two main conditions:
    - **Kwashiorkor**: A type of malnutrition caused by a deficiency in protein, even if calorie intake is adequate. It often leads to symptoms like swelling (edema), irritability, and stunted growth.
    - **Marasmus**: A severe deficiency in both protein and calories. It results in extreme weight loss, muscle wasting, and weakness.

3. **Micronutrient Deficiencies**: This occurs when the body lacks essential vitamins and minerals, leading to conditions such as:
    - **Vitamin A deficiency**: Can lead to blindness and weakened immunity.
    - **Iron deficiency**: Causes anemia, fatigue, and weakened immune function.
    - **Iodine deficiency**: Can lead to goiter.
    - **Vitamin D deficiency**: Causes bone diseases like rickets in children and osteomalacia in adults.

Causes of Under nutrition:

1. **Inadequate Diet**: Not consuming enough of the right foods, especially fruits, vegetables, proteins, and whole grains.
2. **Poor Absorption**: Conditions like celiac disease, Crohn's disease, or other gastrointestinal disorders can hinder the body's ability to absorb nutrients.
3. **Increased Nutrient Requirements**: During times of illness, infection, pregnancy, or breastfeeding, the body may require more nutrients than usual.
4. **Poverty**: Lack of financial resources can limit access to nutritious food.
5. **Food Insecurity**: People who don't have consistent access to sufficient, nutritious food are at higher risk of undernutrition.
6. **Chronic Illnesses**: Diseases like cancer, tuberculosis, or HIV/AIDS can lead to undernutrition by affecting appetite, nutrient absorption, or increasing energy needs.

Symptoms of Under nutrition:

- Unexplained weight loss
- Fatigue or weakness
- Delayed growth and development in children
- Poor wound healing
- Brittle hair and nails
- Dry, flaky skin
- Frequent infections or illnesses
- Poor concentration or cognitive impairment

Treatment of Under nutrition:

1. **Dietary Improvements:** Increasing the intake of nutrient-rich foods, including protein, fruits, vegetables, and whole grains.
2. **Micronutrient Supplements:** Providing vitamins and minerals like iron, iodine, vitamin A, and folic acid to correct deficiencies.
3. **Medical Treatment:** For individuals with underlying health conditions like gastrointestinal disorders, appropriate treatment and medications may be needed.
4. **Therapeutic Feeding:** For severely malnourished individuals, specially designed food programs or formula feedings may be required to restore health.

Eating disorders are serious mental health conditions characterized by persistent unhealthy eating behaviors and a preoccupation with food, weight, and body image. These disorders can significantly impact physical, emotional, and social well-being. The most common eating disorders include **anorexia nervosa**, **bulimia nervosa**, and **binge eating disorder**.

Types of Eating Disorders:

1. **Anorexia Nervosa:**
    - **Description**: This disorder involves an intense fear of gaining weight, along with a distorted body image that leads to extreme restriction of food intake. People with anorexia often see themselves as overweight, even if they are severely underweight.
    - **Symptoms**:
        - Extreme weight loss
        - Intense fear of gaining weight
        - Obsession with dieting and food
        - Distorted body image
        - Physical symptoms like fatigue, dizziness, and thinning hair
    - **Consequences**: Anorexia can lead to malnutrition, weakened immune system, osteoporosis, organ failure, and even death if not treated.

2. **Bulimia Nervosa**:
    - **Description**: Bulimia is characterized by episodes of **binge eating** (eating a large amount of food in a short period) followed by **purging** (attempting to get rid of the food through vomiting, excessive exercise, or the use of laxatives).
    - **Symptoms**:
        - Recurrent episodes of binge eating
        - A sense of lack of control during binge episodes
        - Purging behaviors (vomiting, excessive exercise, misuse of laxatives or diuretics)
        - Shame, guilt, or distress related to eating behaviors
    - **Consequences**: Bulimia can lead to dehydration, gastrointestinal problems, electrolyte imbalances, heart issues, and damage to the teeth and esophagus due to frequent vomiting.

3. **Binge Eating Disorder (BED)**:
    - **Description**: Binge eating disorder involves recurrent episodes of consuming large amounts of food, but unlike bulimia, individuals with BED do not engage in purging behaviors. They may feel a loss of control during these episodes.
    - **Symptoms**:
        - Eating large quantities of food even when not physically hungry
        - Feeling embarrassed, guilty, or distressed after binge eating
        - Eating more quickly than normal
        - Eating alone due to shame or embarrassment
    - **Consequences**: BED is associated with obesity, high blood pressure, diabetes, high cholesterol, and emotional distress.

Causes of Eating Disorders:

Eating disorders are complex and can arise from a combination of biological, psychological, and social factors:

1. **Genetics**: A family history of eating disorders or other mental health conditions may increase the risk.
2. **Psychological Factors**: Low self-esteem, body dissatisfaction, perfectionism, or a history of trauma or abuse may contribute to the development of an eating disorder.
3. **Cultural and Societal Influences**: Societal pressure to conform to certain beauty standards, particularly those emphasizing thinness, can influence body image and eating behaviors.
4. **Biological Factors**: Chemical imbalances in the brain, including those that regulate mood and appetite, may play a role in eating disorders.

Treatment for Eating Disorders:

Treatment often involves a combination of approaches, including:

1. **Psychotherapy**: Cognitive-behavioral therapy (CBT) is commonly used to help individuals change unhealthy thought patterns and behaviors related to eating.
2. **Nutritional Counseling**: Registered dietitians can help individuals develop a healthy relationship with food and learn about proper nutrition.
3. **Medical Monitoring**: Medical professionals may need to monitor the physical health of individuals with eating disorders, especially if they are severely malnourished or have other complications.
4. **Medication**: In some cases, medications like antidepressants or anti-anxiety medications may be prescribed to treat underlying mental health issues.
5. **Support Groups**: Group therapy or peer support groups can be helpful for individuals in recovery, providing a sense of community and understanding.

الاسبوع الثامن

الهدف التعليمي :

1. What is GERD and it’s MNT.
2. What is PUD and it’s MN T.
3. What is Celiac and it’s MNT.
4. What is Irritable bowl Dis. and it’s MNT.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

22. أنشطة تفاعلية صفية
23. أسئلة عصف ذهني
24. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

19. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
20. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).

التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Dietary habits and specific food types can play an important role in the onset, treatment, and prevention of many GI disorders. Nutrition therapy is integral in the prevention and treatment of malnutrition and deficiencies that can develop from a GI tract disorder.

Gastroesophageal Reflux Disease

Gastroesophageal reflux disease (GERD) is a very common disease characterised by backflow or regurgitation of gastric contents from the stomach into the oesophagus. During reflux, many patients feel a burning sensation behind the sternum that radiates toward the mouth, producing the most common symptom of GERD: heartburn, which is unrelated to disease of the heart. Other less common symptoms include iron deficiency anaemia with chronic bleeding and aspiration, which may cause cough, dyspnoea, or pneumonitis.

MNT of GERD:

- It is important for patients with GERD to avoid high-fat meals. Slow emptying of the stomach from eating high-fat food increases sphincter relaxation, leading to potential reflux.
- Patients should also avoid overeating, which slows emptying. Eat small frequent meals. Reduce weight for obese patients.
- Foods such as chocolate, alcohol, peppermint, spearmint, caffeine, and high-acid foods (tomatoes, vinegar-based foods, citrus fruits, and juices) may irritate the oesophagus and cause heartburn.
- Avoidance of recumbent positions for 3 hours postprandially. Avoidance of tight, waist-constricting clothing.
- Straining to defecate affects the contents of the stomach by creating additional pressure; prevention and management of constipation are important.

Peptic Ulcer Disease (PUD)

Normal gastric and duodenal mucosa is protected from the digestive actions of acid and pepsin by the secretion of mucus, the production of bicarbonate, the removal of excess acid by normal blood flow, and the rapid renewal and repair of epithelial cell injury. Peptic ulcer refers to an ulcer that occurs as a result of the breakdown of these normal defence and repair mechanisms. Typically, more than one of the mechanisms must be malfunctioning for symptomatic peptic ulcers to develop. Peptic ulcers typically show evidence of chronic inflammation and repair processes surrounding the lesion. The primary causes of peptic ulcers are H. pylori infection, gastritis, use of aspirin, other NSAIDs and corticosteroids, and severe illness.

MNT of Peptic Ulcer Disease (PUD)

• In persons with atrophic gastritis, vitamin B12 status should be evaluated because of lack of intrinsic factor and gastric acid results in malabsorption of this vitamin.

• Low acid states may influence absorption of iron, calcium, and other nutrients because gastric acid enhances bioavailability.

• In the case of iron deficiency anaemia, other causes may be the presence of H. pylori and gastritis. Eradication of H. pylori has resulted in improved absorption of iron and increased ferritin levels.

• Dietary recommendations are formed from individual tolerance and should be considered supplemental to pharmacologic therapy.

• No conclusive evidence supports use of a traditional “bland” diet to decrease gastric acid secretion or increase the time it takes to heal ulcers.

• General nutritional therapeutic recommendations include the following:

▪ Emphasize a balanced, nutritious diet.

▪ Limit the following foods and seasonings, and encourage avoidance of lifestyle habits known to increase acid secretion, inhibit healing, or both:

• Caffeine (including coffee, tea, or decaffeinated coffee)

• Black pepper

- Chocolate
- Foods that are irritating or not well tolerated
- Alcohol
- Eating less than 2 hours before bedtime.

Celiac Disease and Gluten Sensitivity

Celiac disease is a chronic autoimmune disorder in which the mucosa of the small intestine, especially the duodenum and proximal jejunum, is damaged by dietary gluten. Although the classic symptoms are diarrhoea, abdominal distention, fat malabsorption, and weight loss, many patients do not present with GI symptoms or are asymptomatic. Others may experience anaemia, osteoporosis, infertility, or even lymphoma if their disease is untreated.

MNT of Celiac Disease

- In general, patients should be assessed for nutrient deficiencies. In all newly diagnosed patients, the clinician should consider checking levels of ferritin, red blood cell folate, and 25-OH vitamin D.
- If patients present with more severe symptoms, such as diarrhoea, weight loss, malabsorption, or signs of nutrient deficiencies (e.g., night-blindness, neuropathy, prolonged prothrombin time), other vitamins such as fat-soluble vitamins (A, E, K) and minerals (zinc) should be checked.
- Once gluten is removed from the diet, symptoms gradually improve over the following weeks and months. Intestinal mucosa subsequently returns to a near normal condition.
- Wheat are the main sources of gluten-like proteins; it is also present in oats and barley. Thus, these four grains have always been eliminated from the diet. However, a growing body of evidence suggests that moderate amounts of oats may be safely used in diets of most adults with Celiac disease. Corn and rice are usually the substitute grains used.

• The healing of the intestinal mucosa that occurs after initiation of a gluten-free diet improves nutrient absorption, and many patients who eat well-balanced gluten-free diets do not need nutritional supplementation.

• However, most specialty gluten-free products are not fortified with iron, folate, and other B vitamins like other grain products, so the diet may not be as complete without at least partial supplementation. Anaemia should be treated with iron, folate, or vitamin B12, depending on the nature of the anaemia.

• Patients with malabsorption may benefit from a bone density scan to assess for osteopenia or osteoporosis. Calcium and vitamin D supplementation are likely to be beneficial in these patients.

• Electrolyte and fluid replacement is essential for those dehydrated from severe diarrhoea.

Irritable Bowel Syndrome

Irritable bowel syndrome (IBS) is a functional GI disorder involving disturbances between the brain and the gut. Patients with IBS can be divided into subgroups with alternating bowel habits (IBS-A), constipation-predominant IBS (IBSC), and diarrhoea-predominant IBS (IBS-D).

MNT of Irritable Bowel Syndrome

• Depending on the individual's symptoms and food diary, lactose, gluten, or sugars may be eliminated from the diet.

• The low-FODMAP (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols) diet is now accepted as a strategy.

• The low-FODMAP diet limits high sugar intake, which increases osmolarity.

• Foods containing fructose (apples, pears, watermelon, figs, honey, fruit juice concentrate); lactose (milk, ice cream, soft cheeses); polyols (sorbitol and mannitol) would be restricted.

• For patients with constipation-predominant IBS, a high-fiber diet (20 to 30g/day) may ease symptoms.

الاسبوع التاسع

الهدف التعليمي :

1. Therapeutic diet of DM .
2. Therapeutic diet of Hypertensive patient.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

25. أنشطة تفاعلية صفية
26. أسئلة عصف ذهني
27. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

21. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
22. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).

التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Nutritional therapy plays a crucial role in managing **Diabetes Mellitus (DM)** by controlling blood sugar levels, preventing complications, and promoting overall health. The primary goals include:

- ✅ Maintaining optimal blood glucose levels
- ✅ Achieving a healthy body weight
- ✅ Reducing the risk of cardiovascular diseases
- ✅ Ensuring proper nutrient intake

1. Macronutrient Distribution

- **Carbohydrates** (45-60% of total calories)
  - Prefer **complex carbohydrates** (whole grains, legumes, vegetables) over simple sugars.
  - Focus on foods with a **low glycemic index (GI)** to prevent rapid blood sugar spikes.
  - Monitor carbohydrate intake using **carbohydrate counting** or the **plate method**.
- **Proteins** (15-20% of total calories)
  - Choose **lean proteins** like fish, chicken, eggs, tofu, and legumes.
  - High-protein diets should be used cautiously in diabetic patients with **kidney disease**.

Theraputic diet in hypertensive patient

Hypertension, commonly known as high blood pressure, is a significant risk factor for cardiovascular diseases. Implementing a therapeutic diet is a cornerstone in managing and preventing hypertension. Recent guidelines emphasize dietary modifications that can effectively lower blood pressure and promote overall cardiovascular health.

1. Dietary Approaches to Stop Hypertension (DASH) Diet

The DASH diet is specifically designed to combat high blood pressure. It emphasizes the consumption of:

- **Fruits and Vegetables:** Rich in potassium, these help balance the effects of sodium and reduce blood pressure.
- **Whole Grains:** Provide fiber and essential nutrients that support heart health.
- **Low-Fat Dairy Products:** Offer calcium and protein with reduced saturated fat content.
- **Lean Proteins:** Such as poultry, fish, and legumes, which are lower in saturated fats compared to red meats.
- **Nuts and Seeds:** Supply healthy fats, magnesium, and fiber.

The DASH diet also recommends reducing the intake of:

- **Sodium:** Limiting sodium intake to 1,500 mg per day has been shown to significantly lower blood pressure.
- **Saturated and Trans Fats:** Found in fatty meats, full-fat dairy, and processed foods, these fats can raise cholesterol levels and increase heart disease risk.
- **Sugary Beverages and Sweets:** High sugar intake can contribute to weight gain and increased blood pressure.

Studies have demonstrated that following the DASH diet can reduce systolic blood pressure by approximately 11 mm Hg, comparable to the effects of some antihypertensive medications.

2. Sodium Reduction

Excessive sodium intake is directly linked to elevated blood pressure. Current guidelines recommend:

- **Reading Labels:** Choose products labeled "low sodium" or "no added salt."
- **Cooking at Home:** Prepare meals using fresh ingredients to control salt content.
- **Flavoring with Herbs and Spices:** Use alternatives like garlic, lemon juice, and herbs instead of salt to enhance flavor.

Reducing sodium intake can lower blood pressure by 5 to 6 mm Hg in individuals with hypertension.

3. Weight Management

Achieving and maintaining a healthy weight is crucial for blood pressure control. Weight loss can:

- **Reduce Cardiac Workload:** Lowering body weight decreases the amount of work the heart must perform.
- **Improve Vascular Health:** Weight loss enhances blood vessel function and reduces arterial stiffness.

Even modest weight loss of 5% to 10% of body weight can have a significant impact on blood pressure.

4. Alcohol Moderation

Excessive alcohol consumption can raise blood pressure and reduce the effectiveness of antihypertensive medications. Guidelines suggest:

- **Limiting Intake:** Men should consume no more than two standard drinks per day, and women no more than one.
- **Choosing Heart-Healthy Options:** If consuming alcohol, opt for red wine in moderation, which contains antioxidants beneficial for heart health.

5. Potassium-Rich Foods

Potassium helps balance sodium levels in the body and eases tension in blood vessel walls. Incorporate foods such as:

- **Bananas, Oranges, and Apricots:** Fruits high in potassium.
- **Spinach and Sweet Potatoes:** Vegetables rich in potassium.
- **Beans and Lentils:** Legumes that provide substantial potassium content.

Increasing dietary potassium can mitigate the effects of sodium and lower blood pressure.

6. Physical Activity and Lifestyle Modifications

While diet plays a pivotal role, combining it with other lifestyle changes enhances blood pressure control:

- **Regular Physical Activity:** Engage in at least 150 minutes of moderate-intensity exercise per week.
- **Stress Management:** Incorporate relaxation techniques such as meditation, deep breathing, or yoga.
- **Smoking Cessation:** Avoid tobacco use to improve overall cardiovascular health.

الاسبوع العاشر

الهدف التعليمي :

1. Therapeutic diet of DM .
2. Therapeutic diet of Hypertensive patient.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

28. أنشطة تفاعلية صفية
29. أسئلة عصف ذهني
30. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

23. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
24. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).

التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Ntrition plays a critical role in managing renal (kidney) disorders, as the kidneys are responsible for filtering waste products and excess fluid from the body. When the kidneys are compromised, it's important to adjust the diet to support kidney function, prevent further damage, and manage symptoms. Here's an overview of nutritional guidelines for patients with renal disorders:

General Principles of Renal Nutrition

1. **Protein Management**
    - **Why:** The kidneys filter waste products from the breakdown of protein. In kidney disease, the ability to filter these waste products may be reduced, so protein intake needs to be managed.
    - **In early stages of kidney disease (CKD stages 1-3):**
        - Moderate protein intake (around 0.8–1.0 g of protein per kg of body weight) may be recommended to avoid excess waste buildup while still supporting overall health.
    - **In advanced stages of kidney disease (CKD stages 4-5) or dialysis:**
        - Protein needs may increase, especially for patients on dialysis. Protein intake may be increased to 1.0–1.2 g per kg of body weight, as dialysis can remove proteins from the blood.

2.Control of Sodium Intake

- **Why:** The kidneys help regulate sodium levels, and impaired kidney function can lead to sodium retention, increasing the risk of high blood pressure and fluid retention (edema).
- **Recommendation:** Limit sodium intake to 1,500–2,300 mg per day to help manage blood pressure and reduce swelling. Avoid processed foods, canned soups, fast foods, and salty snacks. Opt for fresh, whole foods, and use herbs and spices instead of salt.

3.Potassium Management

- **Why:** The kidneys help regulate potassium, and impaired kidney function can lead to high levels of potassium (hyperkalemia), which can be dangerous and affect heart function.
- **Recommendation:**
  - In early stages of CKD, potassium intake may not need to be restricted, but as kidney function worsens, patients may need to limit foods high in potassium.
  - Foods high in potassium include bananas, oranges, tomatoes, potatoes, spinach, and avocados. The exact limit will depend on lab results and the stage of kidney disease.
- **Tip:** Consult with a healthcare provider or dietitian for personalized recommendations based on blood potassium levels.

4. Phosphorus Control

- **Why:** The kidneys normally excrete excess phosphorus, but in kidney disease, phosphorus can build up in the blood (hyperphosphatemia), leading to bone and cardiovascular issues.
- **Recommendation:**
  - Limit foods high in phosphorus, such as dairy products, nuts, seeds, beans, and cola drinks.
  - Choose lower-phosphorus alternatives, such as non-dairy milk or calcium-rich foods (calcium supplements may also be prescribed in some cases).
- **In cases of advanced kidney disease, phosphorus binders may be prescribed to help control blood phosphorus levels.**

5.• **Fluid Restrictions**

- **Why:** In kidney disease, the kidneys may not be able to remove excess fluid, leading to swelling and fluid retention.
- **Recommendation:** Fluid intake may need to be limited, especially in patients with advanced kidney disease or those on dialysis. The exact fluid restriction depends on individual needs and stage of the disease. Your healthcare provider will provide a recommended daily fluid limit.

6.• **Calcium and Vitamin D**

- **Why:** Kidney disease can affect calcium and vitamin D metabolism, leading to bone mineralization issues.
- **Recommendation:**
  - For patients with kidney disease, maintaining appropriate calcium levels is crucial. Calcium-rich foods such as fortified plant-based milks, and low-fat dairy may be beneficial.
  - Vitamin D supplementation may also be recommended, especially in advanced stages of kidney disease, to help regulate calcium and phosphorus balance.

Dietary Recommendations for Specific Stages of Kidney Disease

1. Early Stages (CKD Stages 1-3)

- **Protein:** Moderate intake (0.8-1.0 g/kg body weight).
- **Sodium:** Limit to 2,300 mg/day or less.
- **Potassium:** Generally, no restriction unless lab tests show high levels.
- **Phosphorus:** Avoid high-phosphorus foods as kidney function declines.
- **Fluid:** Generally, no restriction, but monitor fluid intake if edema develops.
- **Other Nutrients:** Focus on balanced intake of vitamins and minerals, particularly calcium and vitamin D.

2. Advanced Stages (CKD Stage 4 and 5)

- **Protein:** Increased protein intake (1.0–1.2 g/kg body weight) may be necessary for patients on dialysis.
- **Sodium:** Limit intake to 1,500-2,300 mg/day.
- **Potassium:** Restrict potassium-rich foods if hyperkalemia is present (especially in Stage 5 CKD).
- **Phosphorus:** Strict phosphorus control with phosphate binders and dietary restrictions.
- **Fluid:** Restrict fluid intake to manage fluid retention (specific amount depending on individual needs).
- **Calcium and Vitamin D:** Supplementation may be necessary to maintain healthy bone health.

Foods to Include and Avoid

Foods to Include:

- **Low-sodium foods:** Fresh vegetables, fruits (low-potassium varieties like apples, berries, grapes), lean proteins (chicken, turkey, fish), and whole grains.
- **Healthy fats:** Olive oil, avocados (if potassium is not restricted), nuts (in moderation), and seeds.
- **High-quality protein:** Eggs (in moderation), tofu, lean meats, fish, and legumes (depending on potassium restrictions).
- **Low-potassium vegetables:** Cucumbers, bell peppers, onions, and lettuce.
- **Low-phosphorus alternatives:** Plant-based milks, non-dairy yogurt, and low-phosphorus cheeses.

الاسبوع الحادي عشر

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

1. Importance of Proper Nutrition.
2. Nutritional Needs During Pregnancy.
3. Nutritional Needs During Lactation

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

31. أنشطة تفاعلية صفية
32. أسئلة عصف ذهني
33. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

25. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
26. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).
27. التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Nutrition During Pregnancy and Lactation

.1Importance of Proper Nutrition:

Supports fetal growth and development.

Maintains maternal health and prevents complications.

Ensures adequate quality and quantity of breast milk.

.2 🍽Nutritional Needs During Pregnancy:

🔹Calories:

1st Trimester: No additional calories.

2nd Trimester: +340 kcal/day

3rd Trimester: +450 kcal/day

🔹Protein:

71~g/day to support tissue and fetal development.

🔹Iron:

27mg/day to prevent anemia and support blood supply to the fetus.

🔹Calcium:

1,000mg/day for fetal bone and teeth formation.

🔹Folic Acid:

600mcg/day to prevent neural tube defects.

🔹Water:
At least 8–10 cups/day to stay hydrated and support amniotic fluid.

.3 Nutritional Needs During Lactation:

🔹Calories:
500+kcal/day during the first 6 months.

400+kcal/day during the second 6 months.

🔹Protein:
71~g/day to support milk production.

🔹Hydration:
Increased fluid intake to support milk synthesis (around 3 liters/day).

🔹Micronutrients:
Higher needs for Vitamin A, Vitamin D, Calcium, Zinc, and Iodine.

.4 ⊘General Recommendations:
Avoid alcohol, excessive caffeine, and raw or unpasteurized foods.

Eat balanced meals with whole grains, fruits, vegetables, lean proteins, and low-fat dairy.

Take prenatal or lactation supplements as prescribed by a doctor.

Monitor weight gain and nutrient intake with professional guidance.

الاسبوع الثاني عشر

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

1. Importance of Early Childhood Nutrition.
2. Nutrition in Infancy (0–12 Months).
3. Nutrition in Toddlers and Young Children (1–5 Years).

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

34. أنشطة تفاعلية صفية
35. أسئلة عصف ذهني
36. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

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29. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).
30. التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Nutrition in Infancy and Childhood

.1Importance of Early Childhood Nutrition:

Supports growth, brain development, and immune function.

Helps establish healthy eating habits for life.

Prevents malnutrition, obesity, and developmental delays.

.2 Nutrition in Infancy (0–12 Months):

6–0 Months:

Exclusive breastfeeding is recommended.

Breast milk provides all needed nutrients and antibodies.

Formula can be used if breastfeeding is not possible.

12–6 Months:

Begin complementary feeding while continuing breastfeeding.

Introduce iron-rich foods: pureed meats, fortified cereals.

Gradually introduce vegetables, fruits, grains, and protein sources.

Avoid added sugars, salt, honey (risk of botulism), and cow's milk as a drink.

.3 Nutrition in Toddlers and Young Children (1–5 Years):

Transition to a balanced family diet with age-appropriate portions.

Encourage a variety of food groups:

Fruits and vegetables

Whole grains

Lean proteins (meat, eggs, legumes)

Dairy or fortified alternatives

🔹Key Nutrients:
Iron: for brain development (sources: meats, legumes, fortified cereals)

Calcium & Vitamin D: for bone growth (sources: dairy, fortified juices/milks)

Healthy fats: support brain development (from nuts, seeds, oils, fish)

🔹Healthy Habits:
Offer meals and snacks on a regular schedule.

Avoid sugary drinks and processed snacks.

Encourage self-feeding and family meals to develop skills and preferences.

.4 ⊘Foods to Limit or Avoid:
High-sugar, high-salt processed foods.

Small hard foods (whole nuts, popcorn, grapes) that pose choking hazards.

Caffeinated beverages or energy drinks.

.5 📈Monitoring Growth:
Use growth charts to track height and weight.

Regular pediatric checkups to assess nutritional status and development.

الاسبوع الثالث عشر

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

1 .Goals of Diet Therapy.
2. Recommended Dietary Pattern.
3. Key Nutritional Recommendations.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

37. أنشطة تفاعلية صفية
38. أسئلة عصف ذهني
39. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

31. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
32. اشراك الطلبة بالتقويم الذاتي (تصحيح اخطائهم بأنفسهم).

التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Diet Therapy for Cardiac and Hypertensive Patients

.1 Goals of Diet Therapy:

Lower blood pressure

Reduce cholesterol levels

Prevent or manage heart disease

Maintain a healthy body weight

Improve overall cardiovascular health

.2 Recommended Dietary Pattern:

- DASH Diet (Dietary Approaches to Stop Hypertension):

Rich in fruits, vegetables, whole grains, and low-fat dairy

Includes lean proteins, nuts, seeds, and legumes

Low in sodium, added sugars, and saturated fats

.3 Key Nutritional Recommendations:

- Sodium (Salt):

Limit to 1,500–2,300 mg/day

Avoid processed foods, canned soups, salty snacks

- Fats:

Reduce saturated fats (found in red meat, butter, full-fat dairy)

Avoid trans fats (in many processed foods)

Use healthy fats like olive oil, avocados, and nuts

- Fiber:

Aim for 25–30 g/day from whole grains, fruits, vegetables, legumes

Potassium:
Helps counteract sodium's effect on blood pressure

Sources: bananas, oranges, spinach, sweet potatoes (unless restricted)

Cholesterol:
Limit dietary cholesterol to <200 mg/day (especially if LDL is high)

Calories:
Adjust intake to maintain or reduce weight depending on the patient's condition

.4 Lifestyle & Other Considerations:
Weight management: Even 5–10% weight loss can reduce blood pressure

Limit alcohol: Max 1 drink/day for women, 2 for men

Stay hydrated: Drink enough water daily

Quit smoking: Essential for heart health

Regular physical activity: At least 150 minutes/week of moderate exercise

.5 ⊘Foods to Avoid:
Fried and fast foods

Processed meats (sausages, salami)

Full-fat dairy and cheese

Sugary drinks and desserts

Excess salt and condiments like soy sauce

الاسبوع الرابع عشر

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

1 .Goals of Renal Diet Therapy.
2. Key Dietary Modifications.
3. Key Nutritional Recommendations.

مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

40. أنشطة تفاعلية صفية
41. أسئلة عصف ذهني
42. أنشطة جماعية (إذا تطلب الامر)

أساليب التقويم:

33. التغذية الراجعة الفورية من قبل التدريسي (التقويم البنائي).
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التغذية الراجعة النهائية (التقويم الختامي)، ويقصد به حل الأسئلة المعطاة كنشاط صفي في نهاية المحاضرة.

Diet Therapy for Patients with Renal (Kidney) Disorders

.1 Goals of Renal Diet Therapy:

Support kidney function

Prevent buildup of waste and fluid

Maintain electrolyte balance

Reduce complications (e.g., hypertension, bone disease)

Delay progression of chronic kidney disease (CKD)

.2 🍽️ Key Dietary Modifications:

- Protein:

Early stages (CKD 1–3): Moderate intake (0.8–1.0 g/kg/day)

Advanced stages or on dialysis (CKD 4–5): Higher intake (1.0–1.2 g/kg/day)

Sources: High-quality proteins like eggs, fish, poultry (in appropriate amounts)

- Sodium:

Limit to 1,500–2,300 mg/day

Helps control blood pressure and reduce fluid retention

Avoid processed foods, salty snacks, canned foods

- Potassium:

Controlled based on blood levels

If high (hyperkalemia): Avoid bananas, oranges, tomatoes, potatoes, spinach

If low (hypokalemia): Increase intake with medical advice

🔹Phosphorus:
Limit high-phosphorus foods: dairy, nuts, beans, dark colas

Excess phosphorus leads to bone and heart issues

Use phosphate binders if prescribed

🔹Fluids:
Restricted if fluid retention, swelling, or on dialysis

Monitor based on urine output and doctor's recommendations

🔹Calcium & Vitamin D:
Needed for bone health

May require supplements, especially in advanced CKD

.3 ✅Sample Foods to Include:
Low-potassium fruits (apples, berries, grapes)

Low-sodium fresh vegetables (cucumbers, bell peppers)

Lean proteins in controlled amounts

White rice, pasta, refined grains (low in phosphorus)

.4 ⛔Foods to Limit or Avoid:
High-sodium foods: chips, pickles, fast food

High-potassium foods: bananas, oranges, avocados (unless permitted)

High-phosphorus foods: dairy, seeds, nuts, dark sodas

High-protein diets (unless on dialysis)

.5 📝Other Recommendations:
Work with a renal dietitian for individualized guidance

Regularly monitor blood levels of potassium, phosphorus, and creatinine

Label reading is essential for managing hidden sodium and phosphorus.

الاسبوع الخامس عشر

الهدف التعليمي (الهدف الخاص لكل للمحاضرة):

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مدة المحاضرة: ساعتان

الأنشطة المستخدمة:

43. أنشطة تفاعلية صفية
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.1Goals of Nutrition Therapy in Cancer:

Maintain nutritional status and prevent malnutrition

Support the immune system during treatment

Manage treatment-related side effects (nausea, vomiting, loss of appetite)

Promote healing and recovery

Improve quality of life

.2 🍽️Nutritional Challenges in Cancer Patients:

Loss of appetite (anorexia)

Taste changes or metallic taste

Nausea/vomiting due to chemotherapy

Mouth sores or difficulty swallowing

Cachexia (severe weight and muscle loss in advanced stages)

.3 Nutritional Recommendations:

Calories:

Increase calorie intake to prevent weight loss

Frequent small meals and snacks

Use calorie-dense foods (nut butters, oils, avocados)

Protein:

2.0–1.2g/kg/day depending on condition and treatment

Supports tissue repair, immune response, and muscle maintenance

Sources: lean meats, eggs, dairy, legumes, protein supplements

🔥Fluids:
Prevent dehydration, especially if vomiting or diarrhea

Use broths, herbal teas, soups, electrolyte solutions if needed

🔥Vitamins & Minerals:
Ensure adequate intake of vitamins A, C, D, E, zinc, and selenium

Use supplements only under medical supervision

.4 ✅Foods to Include:
High-protein, high-calorie options (Greek yogurt, eggs, milkshakes)

Soft, bland foods (mashed potatoes, oatmeal) for oral discomfort

Easily digestible vegetables and fruits (steamed, peeled)

Smoothies, soups, and fortified drinks

.5 🚫Foods to Avoid (Depending on Condition):
Spicy, acidic, or rough foods (can irritate the mouth or stomach)

Raw or undercooked foods (in immunocompromised patients)

Caffeinated and carbonated beverages if causing discomfort

Alcohol and tobacco — strictly discouraged

.6 📝Additional Tips:
Eat when appetite is best, often in the morning

Use plastic utensils if metallic taste is present

Work with a dietitian for a tailored plan

Oral nutrition supplements may be necessary (e.g., Ensure, Boost)