Module 6: Nutrition: Food & Diet. KRC

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Instructions: Complete the class notes from the ppt slides. Use MS Words to fill in the blanks.

Living Things as Chemical Factories: Matter and Energy Manipulators

1. **Nutrients**: All molecules required to support the body's chemical reactions are obtained from food and are called**_____Nutrients_____.** Includes inorganic _____**elements**_____and organic _____**molecules** _____
2. **Diet:_____All of the food and drink consumed by an organism** _____
3. **The Process of Nutrition**
   Nutrition involves FOUR steps.
   A. **_____Ingestion_____**: process of taking food (eating).
   B. _____Digestion_____: involves breaking down of food into simpler forms.
   C. _____Absorption_____: involves movement of simple molecules from the digestive system to the blood to be dispersed throughout the body.
   D. _____**Assimilation_____:** involves converting the absorbed nutrient into a molecule that is part of your body.

3. Energy in Food & BMR:

The unit used to measure the amount of energy in food is ___**Kilocalorie**_____ (kcal), often referred to as Calorie (with a capital C) or a___**food_____ ____calorie**_____. **Basal Metabolic Rate (BMR).** An estimate of the amount of energy needed to maintain basic body functions while at rest is ____**Basal _____ __Metabolic_____ _Rate**_____.

4. Chemical Composition of Diet: The six classes of Nutrients

Nutrients are divided into six major categories:

1. _____**Carbohydrates_____** 2. _____**Lipids** _____ 3. _____**Vitamins** _____
4. ___**Minerals** _____ 5. _____**Water** _____ and 6. _____**Protein**_____.

5. Carbohydrates. A) **_____Simple Sugars_____**(glucose)
B) **____Complex Carbohydrates_____**(starch, fiber, glycogen, cellulose)
Functions: 1) provide**____Energy___.**2) building blocks in the manufacture of**_____Nucleic Acids _____**. 3) source of**____Fiber_____**; which keeps the digestive system**___healthy_____,** by preventing **___Constipation_____&___Hemorrhoids_____**. Fiber also help to control**_____Weight Gain_____**. Fiber **_____does____ _not_____** provide **_Energy_____.** Excess of carbohydrate in the diet causes increase in ___**Body_____ _____Weight_____.**

6. Lipids: There are THREE classes of lipids. A) ___**Phospholipids _____**
B)__Steriods_____ **C) _____Triglcerides** _____
(TRUE FATS). Phospholipids make up__**Cell__Membranes** _____.
_Cholesterol____ is a steroid. Triglycerides are the____**True_ __fats**___.
True fats are 1) an excellent source of ___**Energy**_____ ; releases____**9 kilo cal___** of energy/gram of

fat. 2) Provide __**Insulation**____ against cold. 3) Vitamins A, D, E and K are lipids and will not be _____**absorbed**_____ unless ___**fats**_____is present. 4) Absorbs _**shock**_____ 5) Ingestion of _____**fat**_____ (a class of lipid) gives a **full** feeling after a meal.

7. Proteins are made up of small units of_____**amino acids**___. There are two classes of ___**Proteins**_____. A)___**Complete**____ protein: contains all the _**amino**_ __**acids** __ necessary for good health. B)____**Incomplete**__ protein: lacks some of the __**essential**____ amino acids necessary for the body to function efficiently. **Functions**: 1) proteins are part of _**Hemoglobin**___ & ___**Cell** _____ _____**membrane**___ 2) Some _____**Hormones**_____ are made of protein. 3) All _**Essential** ____ are made of protein. 4) _____**Hair** ___, _**Muscle**_____ & connective tissue are made of protein.

7B. **Protein-sparing:** Proteins cannot be __**Stored**_____ and used later. We only need a small amount of protein in our_____**diet**_____. Protein is the _____**Least** ____ ____**valuable**_____source of**_energy__.** During the early stages of____**Starvation**_____**,** the amount of _____**Fat**_____in the body will steadily decrease, but the amount of ____**Protein**_____will drop only slightly. This is known as_____**Protein**_____ ___**Sparing**__

8. Essential Nutrients: _____**CERTAIN NUTRIENTS CANNOT BE MADE IN THE BODY AND HAS TO BE SUPPLIED IN THE DIET.**_____ **Examples:** 1) _____**Vitamins**_____ 2) _____**Minerals**_____ 3) _____**Essential** _____ _____**Amino**___**Acids**___ 4) _____**Essential**_____ _____**Fatty** _____ ___**Acids**_____.

9. Vitamins: ___**Organic**_____ molecules needed in small amounts to help ___**enzymes**_____ work properly. Examples: VitaminA, vitamin B_1(_____**Thiamin**___), Vitamin B_2 (_____**Riboflavin**_____), vitamin B_3(____**Niacin**____**),** Vitamin C, D, E, K. Do not provide___**Energy**_____**.** Serve as _____**coenzymes**_____. __**Essential**_____ nutrients. Most are acquired from __**Food**_____**.** _____**Vitamin**___ __**D**___is made in our bodies when ___**Uv**___ ____**Light**_____ hits __**colesterol**_____.

10. Minerals: _____**Inorganic**_____ elements. _____**Essential**_____ nutrients. Examples: **Iron**: present in ___**Hemoglabin**_____ helps to carry__**Oxygen**_____. Lack of iron may cause_____. **Calcium** : Builds strong _____**Bones**_____ **&__Teeth**_____. Lack of calcium may cause____**Osteoporosis**_____**.** Major source of calcium is _____**Dairy**_____ __**Products**_____. Sodium ___**Ions**____**& __Potassium**_____ ions help in transmitting ___**Nerve**_____ _____**Impulses**_____**.**

11. **Water:** Essential to __**life**_____**.** The human body is ____**65%**_____ water. Universal ___**Solvent**_____. Solutions of ions in water are called _**electrolytes**_____) . Most _____**Chemical Reactions**____in organisms occur in water.

12. Deficiency Diseases: Lack of __**Nutrients**_____ in the diet may cause _____**Deficiency Diseases**____ . Examples: A. _____**Kwashiokor**____ is one type of_____**Protein**____ _____**Deficiency**_____ . Results in a_____**distended**_____ _____**belly**_____**,** slow growth, slow movement and depression. B. Lack of vitamin A causes____**Night**_____ ___**Blindness**_____, skin ____**Infections**_____, & dry skin. C. Lack of _____**Thiamin**_____(vitamin B1) causes ____**Beirberi**_____(heart & nerve problem). D. Lack of _____**Vitamin C**_____causes _____**Scurvy**_____. E.

_____**Osteoporosis**_____ is caused by ___**Calcium** _____ deficiency. Results in a loss in _____**Bone Mass**____.

13. Dietary Reference Intakes: Guidelines for maintaining good health. Very specific for___**men**_____ **,** ___**women**_____ **,** ___**children**_____ **,** ____**pregnant**_____ women, etc. Published by the USDA. Used in preparing _____**food labels**__. Labels list ingredients from ____**greatest**_____ **to** _____**least**_____in quantity. Also provide ____**caloric**_____ information and _____**amounts**_____ of various nutrients.

14. The Food Guide Pyramid:

A simple guide to _____**planning diet____.** Generated by the department of agriculture.

14A. Grain: Includes vitamin-enriched or whole-grain ____**cereal**_____. Examples: Breads, bagels, cereals, crackers, pasta, etc. ____**whole grains**____ are the best. Provide fiber that facilitates ___**digestion**_____. Satisfy ___**appetite**___. **14B**. **Fruits:** A botanical term for an **_enlarged**_____ or modified _____**ovary**____ of a plant. Examples: Melons, berries, apples, oranges and bananas.

14C. **Vegetables:** Nutritionally defined as plant material that is ____**not sweet**__ and is eaten with the main meal. Include: Broccoli, carrots, cabbage, corn, green beans, lettuce, tomatoes, potatoes, etc.
Positive health benefits: **_Cancer**_____ protection, _____**Vitamins**_____ , provide ___**fiber**_____.

14 D. Milk : Includes__**cheese**_____, ice cream, _____**yogurt**_____ , and ____**milk**_____. Good source of _____**calcium**____.

14E. Meat and Beans: Usually our main **____ __Source of protein_ _____.**
Includes: Beef, chicken, fish, nuts, beans, peas, tofu, eggs. _____
_____**Animal proteins**_____ are **____complete**_____ proteins. Usually contain high levels of fat.
_____Plant proteins_____ are _____**incomplete**_____ proteins. Usually do not have high levels of fat.
Different plants must be _____**combines**_____ to obtain all _____**essential**_____ amino acids.

14 F. **Oils:** Needed to obtain **essential fatty acids. Unsaturated** is better than ____**saturated**_____.

14G. **Exercise:** ___**Exercise**_____ is also included in the current Food Guide Pyramid because of the increasing number of _____**Overweight**_____ and ____**obese**_____ adult people in USA. _____**30 minutes** _____ a day is recommended.

15. Body Mass Index (BMI): BMI gives a guideline for determining whether a person is **___obese_____ or _____overweight**_____. Body mass index evaluates weight based on height.
An adult who has a BMI between **___25_____** and ___**29.9**_____ is considered _____**overweight**_____. An adult who has a BMI of ____**30**____ or more is considered ____**obese**_____.

16. Eating Disorders: **A.** _____**Obesity**_____**:** Occurs when people _____e**at more calories** ___ than they use. Genetic studies also indicate there may be a **genetic** component to obesity. May involve a **_____Chemical_____**imbalance in the brain. **B.** _____ : (hunger of an ox) A disease involving a cycle of eating _____**binges**_____ followed by ___**purging**_____ the body of food. Purging may involve _____**vomiting**_____ or the use of _____**laxatives**_____or____**diuretics**_____ .They are hard to detect as they have normal body weight.

C. ____**Anorexia Nervosa**_ : A nutritional deficiency disease characterized by__**severe**_____ , prolonged _____**weight loss**___. Caused by an extreme fear of becoming _____**overweight**_____. Their____**bones**_____ are visible through their _____**skin**_____ .

17. Nutrition at Different Stages of Life. **A.**

Infancy (0 – 12 months): A person's total energy needs per kg are _____**greatest**_____ during the first year of life.

B. **Childhood:** Rate of growth _**slows**_____ after the first year. The body becomes more lean, bones elongate and the ____**brain**_____ completes its growth. ___**Minerals**_____ need to be present to support**_____Growth_____**.

C. Adolescence: During this stage, the body changes from ____**non-reproductive**_____ to ____**reproductive**_____. Puberty lasts 5-7 years. ____**Males**_____ experience a second _____**growth**_____ spurt**.**

D. Adulthood: A **_____plateau_____**phase; Nutrition should be focused on_____**maintenance**_____ .

E. **Old Age:** ____**Digestion**_____ and _____**Absorption**_____ slows as ____**age**_____ increases. ____**Nutritional**_____ deficiencies result. **_____Vitamin_____**and mineral _____**Supplements**_____ may be necessary. _____**exercise**_____ is very important to prevent ____**muscle loss**___.