NUTRITION IN ADOLESCENCE & VEGETARIAN

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Nutrition and Child Development

Nutritional status of children during the critical period is of paramount importance for later physical, mental & social development.

Outcomes of inadequate diet

- Poor growth
- Poor cognition
- Poor muscle development
- Reduced work capacity
- Poor social development
- High rates of illness
- Difficulty in school

- Frequent illness adversely affects growth & development of children[1]

- Growing children need the **BEST** nourishment with all essential nutrients in recommended quantity[2] for
  - ❖ Optimal immune function
  - ❖ Faster recovery
  - ❖ Healthy physical growth
  - ❖ Mental development

- *Journal of Nutrition*. 1999;129:531-533.
- Healthy Nutrition: An Essential Element of a Health-Promoting School. WHO, FAO and Education International, 1998. WHO Information Series on School Health – Document 4. Geneva: WHO

Nutrition and Health

- **Childhood and adolescence** = key periods for growth and development
- Ensure daily energy and nutrients requirements for health, growth and development and health in adulthood
- Inadequate intake of nutrients during infancy

(esp. **0-2 years**) might cause ***irreversible changes***

ADOLESCENCE

- Another rapid state of growth occurs during adolescence.
- Nutrient needs rise, iron and calcium are especially important.
- Busy lifestyles make it challenging to meet nutrient needs and develop healthy habits.
- Peer pressure is significant among adolescents.

ADOLESCENCE

- Growth and Development
- Growth speeds up and continues for about 2 ½ years.
- Gender differences
  - ✓ Females begin puberty at 10-11 years of age, grow 6 inches taller, add fat, and gain about 35 pounds.
  - ✓ Males begin puberty at 12-13 years of age, grow 8 inches taller, add lean body mass, and gain 45 pounds.

ADOLESCENCE

- Energy and Nutrient Needs
- Energy Intake and Activity
- Needs vary depending on rate of growth, gender, body composition, and physical activity.
- Energy needs can range from 1800 kcalories per day for an inactive female to 3500 kcalories per day for a highly active male.
- Problems with overweight and obesity

ENERGY & NUTRIENTS NEED FOR ADOLESCENCE

- Vitamins
  - Needs for all vitamins increase
  - Vitamin D needs special attention because it allows for calcium absorption.
- Iron
  - Females' needs increase because of menstruation.
  - Males' needs increase because of developing lean body mass.
  - Iron deficiency is a concern.

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ENERGY & NUTRIENTS NEED FOR ADOLESCENCE

- Calcium
  - Crucial time for peak bone mass
  - Increase milk and milk products
  - Low calcium intakes and physical inactivity may cause problems with osteoporosis in later life.

FOOD CHOICES & HEALTH HABITS (ADOLESCENCE)

- Snacks
  - Provide ¼ of daily energy intake
  - Favourite snacks are often high in fat and sodium and low in fiber.
- Beverages
  - Soft drinks replace fruit juices and milk.
  - Caffeine may be an issue.

FOOD CHOICES & HEALTH HABITS (ADOLESCENCE)

- Eating Away from Home
  - 1/3 of meals are consumed away from home
  - Influence of fast-food restaurants
  - Peer influence is strong when making nutritional choices.

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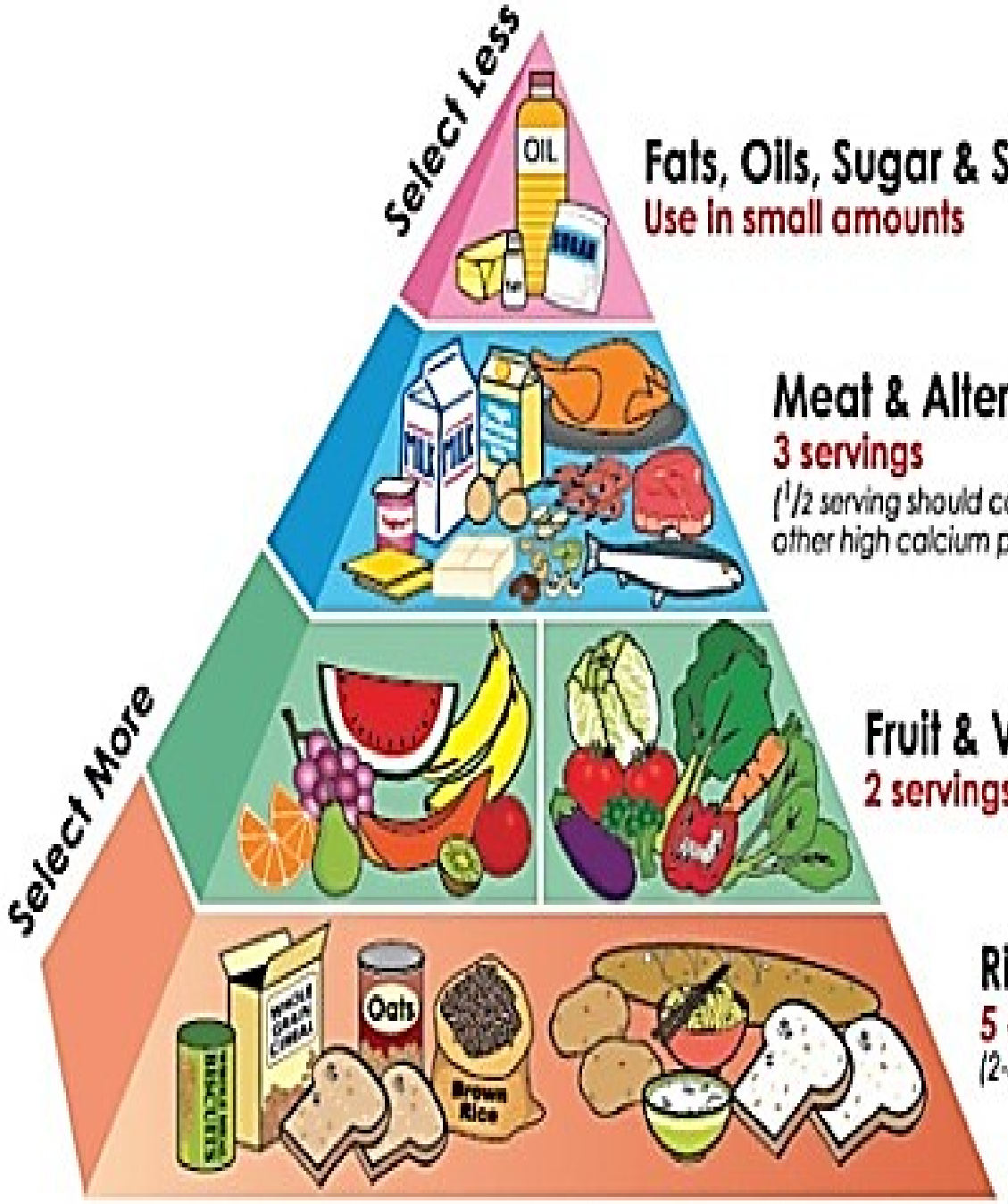

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Food Group	Number of Servings /Day	Example of 1 Serving
Rice and Alternatives	5-7	▪ 2 slices bread (60g) ▪ bowl* rice (100g) ▪ bowl noodles or beehoon (100g) ▪ 4 plain biscuits (40g) ▪ 1 thosai (60g) ▪ 2 small chapatis (60g) ▪ 1 large potato (180g) ▪ 1 cup plain cornflakes (40g)
Fruit	2	▪ 1 small apple, orange, pear or mango (130g) ▪ 1 wedge pineapple, papaya or watermelon (130g) ▪ 10 grapes or longans (50g) ▪ 1 medium banana ▪ cup*** dried fruit (40g) ▪ 1 glass pure fruit juice (250ml)
Vegetables	2	▪ mug** cooked leafy or non-leafy vegetables (100g) ▪ round plate+ cooked vegetables ▪ 150g raw leafy vegetables ▪ 100g raw non-leafy vegetables
Meat and Alternatives	2-3	▪ 1 palm-sized piece fish, lean meat or skinless poultry (90g) ▪ 2 small blocks soft beancurd (170g) ▪ cup cooked pulses (e.g. lentils, peas, beans) (120g) ▪ 5 medium prawns (90g) ▪ 3 eggs (150g)++ ▪ 2 glasses milk (500 ml) ▪ 2 slices of cheese (40g)

* rice bowl ** 250ml mug *** 250ml cup +10 inch plate

++ While 3 eggs are equivalent in protein content to other items listed under the meat and alternatives group, egg yolks are high in cholesterol. Thus, eat no more than 4 egg yolks per week.

Vegetarianism

The Vegetarian Society defines a vegetarian as:

"Someone who lives on a diet of grains, pulses, nuts, seeds, vegetables and fruits with, or without, the use of dairy products and eggs. A vegetarian does not eat any meat, poultry, game, fish, shellfish or by-products of slaughter."

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Vegetarianism

There are different types of vegetarian:

- Lacto-vegetarians (eat dairy products but not eggs, poultry, meat or seafood)
- Ovo-vegetarians (eat eggs but not dairy products, poultry, meat or seafood)
- Lacto-ovo vegetarians (eat eggs and dairy products, but not poultry, meat or seafood)
- Pescetarian (eat fish, eggs and dairy products, but not poultry or meat).

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VEGETARIANS

- **Partial vegetarian**
  - Fish, exclude red meat, may eat poultry
- **Lactoovovegtarian**
  - Plant foods, dairy products & eggs
- **Lactovegetarian**
  - Plant foods & dairy products
- **Semi-vegetarians**
  - Do not eat red meat but may include chicken or seafood with plant foods, dairy products and eggs.
- **Total vegetarian (vegan)**
  - Plant foods only

Vegans

Vegans do not eat:

- meat, fish, seafood or other animal by-products such as gelatine;
- dairy products such as cows milk, cheese, yogurt, goats milk;
- eggs or foods containing eggs such as mycoprotein;
- honey.

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REASONS (VEGETARIAN DIET)

- Religious and moral views
  - Hinduism: pork & beef are not eaten; strict lactovegetarians
  - Buddhism: lactoovovegetarian, total vegan
- Economic and environmental circumstances
  - Meat is expensive
- Health benefits
  - Lower rate of CHD, stroke & certain cancers

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Vegetarians and vegans

Vegetarians and vegans can obtain all the nutrients needed to be healthy (with the exception of vitamin B12 in strict vegan diets) by consuming a varied diet.

However, some nutrients are harder to get from a vegetarian or vegan diet. This is either because plant foods contain smaller quantities than animal foods or because they are less easily absorbed by the body.

NUTRITIONAL CONTENT (VEGETARIAN DIET)

- Most vegetarian diets are nutritionally adequate as long as a variety of foods are eaten
- Individuals at risk are total vegetarians and vegetarians with increased nutrient requirement. Eg: pregnant, lactating women, children & adolescents
- If dairy products are excluded from diet, substitute with fortified soya products, pulses, nut and seeds

Nutrients to consider

The main nutrients to consider for vegetarians and vegans are:

- Iron
- Selenium
- Vitamin B12
- Omega-3 fatty acids.
- Protein (Most vegans and vegetarians get enough protein from their diet however consuming a range of different proteins is important to make sure they get enough of all the essential amino acids.).
- Calcium (for vegans and ovo-vegetarians, especially when breastfeeding as requirements for calcium increase during this time).

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THANK YOU

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