Promoting Good Nutrition and Healthy Diet

MODULE
3

MODULE 3 Promoting Good Nutrition and Healthy Diet

Eating a balanced diet is important to health. Studies prove that following nutrition guidelines can prevent major NCDs, namely cardiovascular diseases, diabetes mellitus and cancer. Diets high in calories and fats are known to increase the risk of atherosclerosis (disease of the arteries characterized by the deposition of plaques of fatty material on their inner walls) leading to cardiovascular diseases. Diets low in fiber and complex carbohydrates are known to increase the risk of cancer and diabetes. Following the nutrition guidelines of low salt, low fat and increased fiber in the diet helps decrease the risks. Health workers have the responsibility of promoting good nutrition with healthy diet. With health workers doing nutrition counseling and education, the occurrence of major NCDs can be reduced.

Objectives

At the end of this module, you should be able to:

1. Recognize the magnitude of NCDs related to poor dietary practices.
2. Discuss nutrition-related practices/conditions of Filipinos contributing to NCDs
    a. Increased weight (obesity)
    b. Increased fat intake
    c. Increased salt intake
    d. Increased intake of processed/preserved/instant foods
    e. Inadequate dietary fiber
3. Describe general strategies to promote good nutrition and dietary practices
4. Discuss dietary recommendations for specific disease conditions such as hypertension, diabetes mellitus.
5. Perform nutrition education and counseling to specific population groups
6. Advocate for a nutrition-friendly environment
    a. Nutrition-friendly establishments in school, workplaces and other settings in the community
    b. Good nutrition policies
    c. Availability of healthy food sources in the community

1. Magnitude of NCDs Related to Poor Dietary Practices

The World Health Organization estimates that 26,500 people are killed by NCDs daily in the Western Pacific Region. This translates to 7 out of every 10 deaths in the Region due to NCDs. More significant is the fact that close to half of deaths occurs in people who are in their productive years.

The Philippines is one of the 23 selected countries contributing to around 80% of the total mortality burden attributable to chronic diseases in developing countries, and 50% of the total disease burden caused by NCDs worldwide. Global and local data show that the major NCDs – cardiovascular diseases, cancers, diabetes mellitus and chronic obstructive pulmonary diseases are linked by four common preventable risk factors related to lifestyle, namely: tobacco use, unhealthy diet, physical inactivity and alcohol use.

The 7th National Nutrition and Health Survey (2008) showed the increasing prevalence of risk factors related to diet and nutrition among Filipinos:

- The prevalence of hypertension (≥140/≥90 mmHg) among adults based on a single visit was 25.3% with the prevalence peaking at age 40 years.
- About 19 in every 100 Filipino young adults in the age group 20-39 years old have pre-hypertension.
- Hypertension based on a single visit BP has significantly increased from 22.5% to 25.3% between 2003 and 2008.
- The prevalence of high fasting blood sugar (FBS_ (≥ 126 mg/dL) among adults was 4.8 %, peaks at age 50-59 years with a prevalence of 9.0%.
- The prevalence of diabetes based on questionnaire was 4.0%, which was almost the same as the prevalence based on FBS (4.8%).
- The prevalence of high fasting blood sugar among adult Filipinos increased from 3.9% in 1998 to 3.4% in 2003 and 4.8% in 2008.
- Total cholesterol, LDL-c and triglyceride levels increased with age, particularly rose between ages 40-60 years.
- The prevalence of low HDL-c remained relatively high from 2003 to 2008.
- Dyslipidemia, based on total HDL-cholesterol and triglyceride levels had significantly increased

2. Nutrition-related Practices Contributing to NCDs

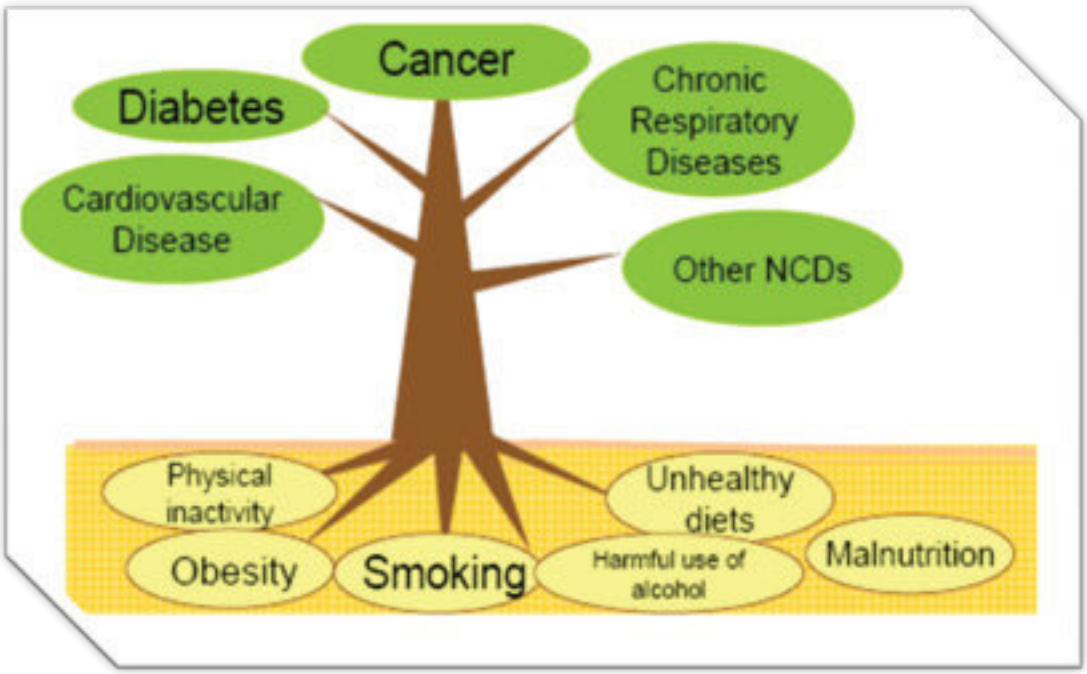
Among the important risk factors to NCDs are high blood pressure, high concentrations of cholesterol in the blood, inadequate intake of fruits and vegetables and other fiber-rich foods, overweight or obesity, physical inactivity and tobacco use (WHO, 2004). The latest National Nutrition and Health Survey (NNHeS, 2008) by the Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST) revealed that from 2003 to 2008, there was an increasing trend of overweight and obesity among adults aged 20 years and over. In 1998, there were about 20 out of 100 adults who were overweight. This number increased to 24 and 27 out of 100 in 2003 and 2008, respectively.

The study of Pedro, Benavides and Barba (FAO, 2006) takes special interest on the increasing trend of overnutrition among children and adolescents mainly because if left unattended can eventually lead to NCDs such as hypertension, diabetes and heart disease. The study observed that in 2003, 24% of adults are overweight or obese, with more females (27.2%) than males (20.9%) who are affected. Results also showed that overnutrition registered the following figures:

- 250 %-increase among the 0-5 y old children from the period 1996-2003,
- 117%-increase among 6-10 y old children from the period 1998 to2003,
- 4.2% of the 11–12 years old, and 3.4% among the 13–19 years old (adolescents) in 2003.
- 45 %-increase among adults

Factors that influence the increasing trend of NCDs worldwide include:

- Increasing life expectancy
- Increasing urbanization
- Increasing industrialization with globalization



Food Consumption Survey conducted by the FNRI (FAO, 2006) covering the period from 1978-2003 revealed the following findings:

- The consumption of other cereals and cereal products, which include breads and bakery products, noodles and snack foods made from wheat flour, peaked at 30 grams in 2003 – an increase of 36 percent on the 22 grams of 1993.
- The intake of sugars and syrups, including soft drinks, increased. The consumption of soft drinks increased by 150 percent, from 2 grams in 1993 to 5 grams in 2003.

Food Consumption Survey conducted by the FNRI (FAO, 2006) revealed:

- Increased consumption of
  - ✔ cereal and cereal products including breads, bakery products, noodles and snack foods from flour
  - ✔ sugar and syrups including soft drinks
  - ✔ fats and oils;
  - ✔ meat and meat products in which nearly 30% of meat intake is processed meat product; poultry; milk and milk products
  - ✔ alcoholic beverages
- Declining consumption of vegetables and fruits

The same study cited other food groups for which major increases in mean per capita intake between 1993 and 2003 were recorded:

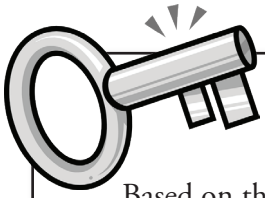
- Fats and oils (50% higher in 2003),
- Meat and meat products (79% higher) – In 2003, intake of pork (32 g) whether fresh meat or popular processed meat products (e.g., hotdogs, meatloaf, sausages) and cooked foods was greater than that of fresh beef (5 g) or organ meats (6 g). In 2003. Processed meat products represented nearly 30% of meat intake.
- Poultry (43% higher),
- Milk and milk products (11% higher)
- Miscellaneous food items (105%higher). 33% (13 g) of the per capita daily intake in 2003 comprised alcoholic beverages and meat products.

On the other hand, consumption of vegetables and fruits declined, as did their percentage contribution to total food intake.

- Intake of fruits, both vitamin C-rich and other fruits hit a low of 54 g in 2003, a decrease of 50 grams since 1978 after a steady 30% reduction during the periods 1987 to 1993 and 1993 to 2003.
- Intake of green leafy and yellow vegetables has remained the same since 1987, while that of other vegetables has increased but only by 4 grams in the past decade.

The study highlights the importance of tracking implied the trends in consumption of these foods and beverages over time, as excessive consumption of processed meat products (which contain more sodium and preservatives than fresh products) and alcoholic beverages may contribute to the incidence of hypertension and related NCDs. (FAO, 2006)

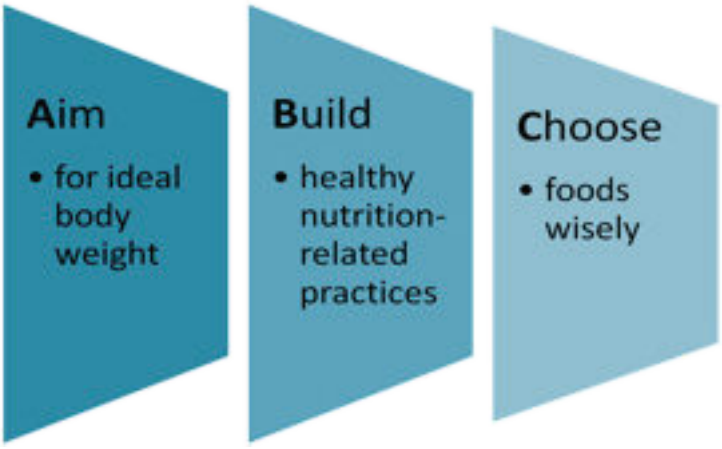
3. Key Areas for Promoting Good Nutrition and Dietary Practices



Based on the Global and Regional Perspectives in NCD Prevention and Control (WHO, 2008), the following are the key areas of actions for promoting good nutrition and dietary practices:

- ✔ Promote exclusive breastfeeding and optimal feeding for infants and young children;
- ✔ Develop a national policy and action plan on food and nutrition that also covers control of diet-related NCDs;
- ✔ Establish and implement food-based dietary guidelines and support the healthier composition of food by:
  - reducing salt levels
  - eliminating industrially produced trans-fatty acids
  - decreasing saturated fats
  - limiting free sugars
  - including more of dietary fiber
- ✔ Provide accurate and balanced information for consumers in order to enable them to make well-informed, healthy food choices;
- ✔ Promote the responsible marketing of foods and beverages to children, in order to reduce the impact of foods high in saturated fats, trans-fatty acids, free sugars, or salt.

There are three main strategies to address the nutrition problems and practices of Filipinos that are related to NCDs. This ABC of promoting healthy nutrition is the key to ensure optimal health and lower the risk of NCDs. Under each strategy are specific guidelines and tasks that health workers should know and share with the people in the community.



3.1 Managing weight

Many factors influence the weight of an individual. Heredity, eating habits, food preferences and selection and amount of daily physical activity or exercise determine one's body weight. However, emotional influences and lifestyle have also been considered to have significant influence on a person's weight.

Weight problems can start at an early age. Even in the Philippines where under-nutrition is still the main nutritional problem, the prevalence of overweight and obesity has increased steadily from 1993 to 2003 not only among adults but also among children and adolescents (FAO, 2006). Although fat children do not necessarily grow up to become fat adults, men and women who were fat in their twenties and thirties tend to stay that way (Hales, 1997).

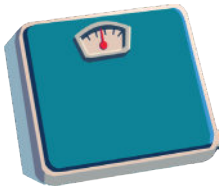
A person is overweight if he/she gains more than 10% of his/her ideal body weight. The condition known as obesity occurs when a person's weight is 20% or more of the ideal body weight. Obesity can create many serious health problems and can increase a person's risk of heart attack, stroke, diabetes and certain types of cancer.

Maintaining a desirable body weight should be the goal of persons who are overweight or obese. There are many diet regimens for overweight/obese persons. Be wary. Not all of these diets are safe. Weight management should be sensible and should not compromise the person's health. (See Appendix 3.1a for quick computation of estimating desirable body weight.)

Table 3.1 Myths and Facts in Dieting

Myths	Facts
You can lose weight if you don't eat breakfast.	Skipping meals, such as breakfast, will make you eat an extra-large lunch
Eating starchy foods, such as bread and pasta, will make you gain weight.	Starchy foods or complex carbohydrate foods have fewer calories per ounce than fats
You can lose weight by eating only one type of food, such as grapefruit, bananas or celery.	Single-food diets are monotonous and nutritionally inadequate. Dieters return to previous eating patterns and gain weight.
Once you lose weight you can resume your former eating habits.	Managing weight means changing eating habits and keeping an exercise regimen for the rest of your life.

How does one overcome weight problem? There is no one diet appropriate for all. It is necessary that a person recognizes the reason for putting on weight and considers practical approaches of maintaining an ideal body weight.



Guidelines to Weight Management:

Recognize eating pattern by keeping a food diary. Food diary is a record of food eaten daily, how many servings, and how the person feels at the time of food intake. (See Appendix 3.6) Tally the daily calories taking note where most of the calories come from. In this way, a person can start considering what food to cut down and how much to cut down. The person's emotional state while eating can give a glimpse of how food is employed to conceal self-esteem or body image issues (Schlundt, cited in Hales, 1997).

3.2 Build good nutritional practices

The changing food consumption pattern of the Filipinos is a growing concern mainly because of the associated increase in trend of NCDs. FAO (2006) points to urban growth and migration as two potentially strong influences on people's dietary patterns. While globalization opened new markets for the country, it also increased food commodity imports especially of processed foods. Communication and technology made possible the introduction of new eating patterns that often leads to confusion about "eating right" and what is a "healthy food".

Eating right is eating foods that contain the essential nutrients to form muscles, bones, organs and other tissues to provide energy necessary to complete one's daily activities. These nutrients and their functions are shown in Table 3.2. A summary of major and micronutrients and their functions, types and sources is also in Appendix 3.2.

Table 3.2 Nutrients and their Functions

Nutrients	Functions
Proteins	Building blocks of the body needed for growth, maintenance and replacement of body cells
Carbohydrates	Organic compounds that provide our bodies and brains with glucose. Glucose is the basic fuel of the body. Simple carbohydrates are referred to as sugars; complex carbohydrates as starches
Fats	Provide energy and serve as carriers for certain vitamins
Vitamins	Organic substances needed in very small amounts by the body to perform a variety of functions
Minerals	Naturally occurring inorganic substances that are needed in small amounts for certain essential functions in the body
Water	Often-forgotten but essential substance that helps in digestion, elimination and maintenance of bodily fluids and temperature.

The Food and Nutrition Research Institute (2001) recommends the Nutritional Guidelines for Filipinos, which aims to encourage the consumption of an adequate and well-balanced diet and promote desirable food and nutrition practices in the general population. The guidelines also provide the general public with simple recommendations about proper diet and wholesome practices to promote good health for every individual and his/her family members. The guidelines are widely used by nutrition educators as framework and reference in educating the public on proper nutrition practices that can also correct or reduce risk of developing NCDs.

There are ten recommended guidelines for a healthful diet. Seven out of the ten guidelines are linked with prevention of NCDs. By following these guidelines, a person reduces chances of getting heart diseases, cancer and diabetes.

Guideline 1. Eat a variety of food everyday

No single food can provide all the nutrients in the proper amounts needed by the body. The Filipino diet is particularly deficient in fruits and vegetables but high in energy intake from fats, sugars and carbohydrates. By eating a variety of food, people make certain there is adequate source of nutrients for optimum health. In ensuring variety of foods every day, refer to the Food Guide Pyramid (Figure 3-1), which groups foods according to types and indicates how many servings of each type should be eaten daily.

Figure 3.1 Daily Nutritional Guide Pyramid for Filipino Adults (FNRI, 2008)

The pyramid has six different food groups: (1) grain foods; (2) vegetables; (3) fruits; (4) milk products; (5) meat, poultry, fish, eggs, beans, nuts; and (6) fats, oils and sweets. It conveys the idea that the bulk of people's diets should consist of water, grains, vegetables and fruits, and emphasizes a diet low in fats and sugar. The number of servings depends on how many calories the person needs, which in turn depends on age, sex, size and activity.

Guideline 3. Maintain children's normal growth through proper diet and monitor their growth regularly.

Insufficient quantities and inadequate quality of complementary foods, poor child-feeding practices and high rates of infection have a detrimental impact on health and growth during these important years (NNC, 2010). An adequate diet for an active child is one that promotes good health and normal growth. A well-nourished child is healthy, strong, alert, has good disposition, and grows at a normal rate. A poorly nourished child is sluggish, if not permanently delayed in physical and mental development. In addition, he is lethargic and frequently ill because of low resistance to infection. On the other hand, over-nutrition may lead to obesity that may cause physical and emotional problems in childhood and later in life. Over-eating and poor eating habits among children are some of the concerns related to NCDs.

- *Preventing Overnutrition Among Children*

Overeating is often a habit learned by a child who is encouraged by his parents to overeat because of the mistaken notion that a fat child is healthy. When overeating becomes a habit, it may result in obesity leading to physical and emotional problems during childhood, which may persist to adulthood. The parent's attitude towards fatness in childhood should be corrected.

The child should be taught good eating habits and practice eating a variety of foods. The child should be restrained from eating too much energy-rich foods like cakes, pastries, candies, chocolates and ice cream, as well as fatty foods.

NUTRITIONAL GUIDELINES FOR FILIPINOS (FNRI)

1. **Eat a variety of foods everyday.**
2. Breast-feed infants exclusively from birth to 4-6 months, and then, give appropriate foods while continuing breastfeeding.
3. **Maintain children's normal growth through proper diet and monitor their growth regularly.**
4. **Consume fish, lean meat, poultry, dried beans.**
5. **Eat more vegetables, fruits and root crops.**
6. **Eat foods cooked in edible/cooking oil daily.**
7. Consume milk, milk products and other calcium-rich foods such as small fish and dark green leafy vegetables everyday.
8. **Use iodized salt but avoid excessive intake of salty foods.**
9. Eat clean and safe food.
10. **For a healthy lifestyle and good nutrition, exercise regularly, do not smoke, and avoid drinking alcoholic beverages.**

**Items highlighted are directly linked to the development and control of NCDs.*

- *Establishing Good Eating Habits*

Food habits are formed very early in life. Children should learn to eat a variety of foods. Children are sensitive to color, flavor, texture and temperature of food, size of servings, and the attitude and atmosphere in which food is served. Conditioning children to have good eating habits is very important. Parents should encourage their child to eat a varied diet that includes:

  - o Plain or mildly flavored foods, cooked with moderate amounts of fats and oils or spread with margarine or butter.
  - o A glass of milk daily to meet the need for calcium, protein and B-vitamins.
  - o Foods fortified with vitamins (especially vitamin A or beta-carotene and vitamin C) and minerals (especially iron and iodine).
  - o A good breakfast each day. The breakfast meal can be any combination of body- building, energy-giving and regulating foods. Generally, a good breakfast provides 1/4 to 1/3 of the RDA for the day.
  - o Nutritious school lunch and snacks.

- *Breaking Poor Nutrition Habits*

Children and adolescents may eat from fast food restaurants occasionally. However, they should be encouraged to include a variety of foods and to select other food items of good nutritional value, too. To enhance the nutritional value of a fast food meal, it maybe accompanied by a salad with reduced fat dressing, milk or fruit juice. High fat or sodium choices should be balanced with lower fat and sodium selections at the next meal. Children and adolescents who have developed the habit of eating high-fat foods, such as potato chips and doughnuts, need a well-planned behavior change.

Guideline 4. Consume fish, lean meat, poultry, dried beans

Including fish, lean meat, poultry or dried beans in the daily meals will not only enhance the protein quality of the diet but will also supply absorbable iron, preformed vitamin A and zinc. Fish, lean meat, poultry without skin and dried beans, in contrast to fatty meats, are low in saturated fats, which are linked to heart disease.

Persons at risk of high blood cholesterol level and heart disease should limit the intake of fatty meat, cholesterol-rich foods and saturated fats. Refer to the classification of Philippine foods according to cholesterol content (Appendix 3.3) to know more about what foods an individual may consume in liberal amounts and which ones he/she should limit.

- Select the leanest cuts and remove all visible fat before eating
- Avoid high-fat processed meats such as luncheon meats, sausage and bacon.
- Choose foods that are labeled 'reduced fat,' 'low fat' and 'fat-free.'
- Use poultry (preferably without skin), fish and vegetables to replace red meat whenever possible.
- Limit intake of egg yolk to 2-3 times a week.
- Increase the consumption of vegetables like legumes, beans, peas, nuts and seeds in place of animal proteins.
- Cook meat or poultry on a rack so that fat will drain off.
- Chill meat or poultry broth until the fat becomes solid. Spoon off the fat ('sebo') before using the broth.

Guideline 5. Eat more vegetables, fruits and root crops

In general, most people do not eat enough vegetables, fruits and root crops. Results of food consumption surveys conducted by FNRI (2003) show that the average consumption of Filipinos of green leafy and yellow vegetables, Vitamin C-rich fruits and root crops are low.

The consumption of more vegetables, fruits and root crops is encouraged because they provide vitamins, minerals, fiber and complex carbohydrates.

How to correct micronutrient deficiencies:

- Consume 2-3 servings of vegetables each day, one serving of which is green leafy or yellow vegetable (1 serving = 1 cup raw vegetables or 1⁄2 cup cooked).
- Take 2 servings of fruits daily (one serving of fruits depends on type of fruit), one serving of which is a vitamin C-rich fruit.
- Choose vitamins and mineral- fortified foods when available.
- Include root crops in your meals at least 3 times a week.

Guideline 6. Eat foods cooked in edible/cooking oil daily

Some foods should be prepared with edible cooking oil to increase energy intake and help prevent Vitamin A deficiency. However, the average daily fat intake in the Filipino diet is usually higher than what is recommended. Source of fat may be in the type of food and in the manner foods are prepared. For individuals at risk of heart disease, limit intake of saturated fats and cholesterol-rich food; use moderate amounts of polyunsaturated fats instead. The same guideline applies even for persons who are not at risk (to minimize possibility of developing these diseases) because this is actually the "healthy diet."

Table 3.3 Types of Fats/Cholesterol and their Functions and Examples

Type of Fats/Cholesterol	Function and Examples
Saturated fats	• tend to raise blood cholesterol levels (include fat in meat, skin of chicken and ducks, butter, lard, cream, milk and milk products and palm kernel oil)
Polyunsaturated fats	• tend to lower total cholesterol level and low density lipoprotein (LDL) or bad cholesterol. It also raises high density lipoprotein (HDL) or good cholesterol levels which include corn, soybean and safflower oils.
Monounsaturated fats	• tend to lower total and LDL levels; HDL remain unchanged; includes canola and olive oil

THE TRUTH ABOUT COCONUT OIL…

Saturated fats are fats found in animal foods including meat and dairy products and some vegetable oils such as palm and coconut oils. Conversely, polyunsaturated fats are fats that tend to lower the level of cholesterol in the blood. Many vegetable oils such as safflower, corn, cottonseed and soybeans are high in polyunsaturated fat. Unlike animal fat, coconut oil contains medium chain triglycerides which are easily digested, absorbed and transported; therefore, they serve as immediate source of energy. (Torres, 2008)

- *Food Preparation Tips (Healthy Heart Menu Guide)*

1. Low fat cooking that preserves taste: microwaving, broiling, baking or steaming food without adding fat.
2. Use non-stick sprays or cookware.
3. Try recipe adjusting – rather than give up favorite recipes, try some low fat, low cholesterol substitutes.
   - Use vegetable oil in place of lard or shortening and try to use less of it.
   - Substitute margarine for butter and use less.
   - Try replacing each egg with 2 egg whites.
4. Great seasonings – use seasoning creatively and forget about the missing fat.
   - Sprinkle iodized low salt herbal blends on meals.
   - Try butter-flavored (fat-free) powders on potatoes, vegetables & noodles.
   - Use low-fat dressings and "light" or "diet" on salads & sandwiches.
5. Smaller portions – reduce calories by making several small changes.
   - Serve food on plates (instead of serving platters) and immediately put leftovers away.
   - Use a small plate, it looks fuller.
   - Eat at the table, not in front of the TV so you will pay attention to how much you are eating.

- *How to Limit Intake of Saturated Fats While Using Fats and Oils in Food Preparation*

1. Minimize frying of foods.
2. Avoid eating food drippings and gravy because of its high fat content.
3. Use corn, soybean, olive, canola and sunflower oil.
4. Avoid the use of saturated fats and oils in cooking.
5. Limit intake of spread and toppings such as butter, margarine and cream and the use of lard, gravy and shortenings.
6. Bakery products, snack foods and other processed foods usually contain saturated fats, thus limit intake of these foods too.
7. In general, AVOID oil or lard that solidifies in room temperature.

The process of converting polyunsaturated oils into semi-solid forms for margarine or shortening converts some of the fat into substance called trans fatty acids which may increase the risk of heart disease and cancer. Trans fatty acids are found in margarine (with higher levels in stick than tub form), commercially prepared cakes, cookies, corn chips, French fries, doughnuts, Danish pastries, pies and vegetable shortening. (Willet and Ascherio,1994)

Guideline 8. Use iodized salt but avoid excessive intake of salty foods

To promote physical and mental development and prevent iodine deficiency disorders, use iodized salt in cooking food and while eating. However, avoid excessive intake of salt and salty foods to prevent hypertension and heart disease. It is estimated that many Filipinos eat more salt and sodium than required. A Filipino diet contains about 2000 mg of sodium from sodium-inherent foods as well as from salt added to food (about 5 gms of salt). With the addition of soy sauce, fish sauce, MSG and other salty condiments during cooking or seasoning at the table, or excessive intake of salty fish and highly salted fermented fish or sauces (bagoong), the sodium intake increases drastically to about 6,000 mg (about 15 gms of salt). Limit salt intake to 5g/day or 2000 mg sodium = 1 tsp of table salt, patis, soy sauce and other condiments with sodium content such as "vetsin" or monosodium glutamate or MSG. For a list of foods high in sodium, refer to Appendix 3.4.

- How to Limit Sodium Intake

1. Eat natural foods with little or no added salt.
2. When cooking, use herbs and spices to naturally flavor or season food instead of table salt, MSG or highly salty condiments.
    a. Combine 3 herbs or less in one dish (but have 1 herb dominant).
    b. Use fresh herbs when possible.
    c. Use lemon juice, wine and fresh ground pepper to accent natural flavors.
    d. Try orange or pineapple juice as a base for meat marinades.
    e. Use different spices and herbs for different meats and fish.
        - For poultry: garlic, mushrooms, lemon grass (tanglad), oregano, curry, red or white onion
        - For fish: bay leaf (laurel), onion and spring onion (dahon ng sibuyas), fresh or dried mushrooms (like tengang daga), green or red bell pepper, tomatoes, chili (siling labuyo), ginger , lemon, kalamansi or lime (dayap) juice
        - For pork: garlic, kamias, tamarind (sampalok)
3. Limit intake of preserved and processed foods, cheese, canned soups, canned fruits and vegetables, instant noodles and canned meats.
4. Limit intake of salty meats and fish (e.g. ham, bacon, tinapa, dilis, daing).
5. Limit addition of condiments (e.g. soy sauce, bagoong, patis and ketchup)
6. Limit intake of broth cubes (e.g. bouillon cubes).
7. Limit intake of salted snacks (e.g. potato chips, salted peanuts, corn chips).
8. Read labels to find out the sodium content of packed or preserved foods.

Guideline 10: For a healthy lifestyle and good nutrition, exercise regularly, do not smoke, and avoid drinking alcoholic beverages.

Healthy diets, regular exercise, abstinence from smoking, and limited alcohol intake are key components of a healthy lifestyle. Balance food intake with physical activity. Perform aerobic exercise regularly for at least 3-5 times a week for 30 minutes or more. Do not smoke. If habit has been acquired already, stop smoking.

3.3 Choose foods wisely

Choosing food wisely goes hand in hand with maintaining the ideal body weight and following nutritional guidelines. Recognize foods one need to limit or avoid. Select foods low in fats and cholesterol and sodium and high in complex carbohydrates and dietary fiber. Reading food labels is an important practice when selecting foods. Food labels provide information on nutrient content of the food product to evaluate foods for presence of additives used to enhance flavor, color, texture, replace or add nutrients or to lengthen shelf life of the product. Lastly, give particular attention on how food is prepared or cooked. Often, food preparation contributes in making the food we eat less nutritious.

How to Read Food Labels

1. Read the ingredients.
   - Notice that ingredients are listed in order by weight from the target amount to the least.
   - Be familiar with terms for different kinds of ingredients. For example, even if the word sugar does not appear on the label, the product may contain sugar, since words ending in ose are generally the names of different sugars.
   - If you have specific dietary restrictions, it is especially important to check the ingredients list first. For example, people who have an allergy from a particular food need to make sure that the product does not contain the ingredient.

2. Notice the number of servings per container.

INSTANT PANCIT CANTON
NUTRITIONAL INFORMATION AS PACKED

Serving size g: 65 Serving per pack: 1

NUTRIENTS	Per Serving
ENERGY, Kcal	294
PROTEIN, g	7
FAT, g	13
CARBOHYDRATES, g	39

	Percentage of RDA* Per Serving
VITAMIN A (with Betacarotene)	33
VITAMIN B2	33
NIACIN	20
VITAMIN B5	20(ESAD)**
FOLIC ACID	33
IRON	33

*Based on Philippine RDA (Adult 20-39 years old)

**Estimated Safe and Adequate Daily Intake

INGREDIENTS:
NOODLES-wheat flour, palm oil, iodized salt, guar gum, sodium carbonate, egg powder, potassium carbonate, FD&C Yellow #5 (tartazine), FD&C Yellow #6, polyphosphates, antioxidant TBHQ

SPECIAL SEASONING, SAUCE, OIL & CONDIMENTS-vegetable oil (may be one of the ff: palm oil, coconut oil, palm olein), soy sauce (water, soy beans, wheat, salt),sugar, dextrin, iodized salt, monosodium glutamate, natural and artificial flavors, spices, hydrolyzed vegetable protein, anti-caking agent, dehydrated chives, disodium 5'-guanylate, caramel color, guar gum, vitamins and minerals, ferrous fumarate, antioxidant (BHA, BHT, propyl gallate, monoglyceride citrate), preservatives (potassium sorbate)

- Serving sizes are standardized for over 100 different food categories, so you can compare similar food products for the number of servings they provide.

3. Note the calories in one serving.
   - Keep in mind that recommended daily caloric intake levels vary depending on a person's age, sex, weight, basal metabolism and activity level. Active teenagers usually need more calories than do older people.
   - If the number of calories is high and you are trying to lose weight, you might want to choose a different food.

4. Look at the percentages of the daily values.
   - The food label indicates the Percentages of the Daily Values for different nutrients that are supplied by the product. For example, if the label says "Vitamin C-20%," that food supplies 20% of the vitamin C that the average person should obtain each day.
   - Check the percentages of valuable nutrients, such as dietary fiber, iron, calcium and vitamins. Evaluate whether the food is a good source of many nutrients that you need.
   - Also note the percentage of nutrients that you should limit such as saturated fat and cholesterol. If food is high in those nutrients, you may want to avoid it.

5. Read any health-related descriptions or claims, e.g., "high fiber," "low fat."
   - You can use these descriptions for guidance. Also notice any health claims on the package. For example, a label can indicate that high-calcium foods may help prevent osteoporosis.

6. Note food additives used.
   - Additives that are used to prevent spoilage or to keep foods from losing their natural color or texture are called **preservatives**. For example, the preservative calcium propionate prevents mold from growing on baked goods. Many preservatives prevent food poisoning and increase the length of time that a food is safe to eat.
   - Often when food is canned or processed in some other way, some of its vitamins and minerals may be lost. When nutrients are added to replace those that have been lost, the food has been **enriched**. Some breads and cereals are enriched with the vitamins thiamin, riboflavin and niacin, and the mineral iron
   - If vitamins, minerals and even proteins are added to a food that does not normally contain them, the food is fortified. Milk, for example, is **fortified** with vitamin D.
   - A **leavening** agent makes baked goods rise.
   - An **emulsifier** is used to keep fats from separating from the other ingredients in a food. Emulsifiers in salad dressing, for example, keep the fat from floating to the top.

7. Note freshness or expiry date.
   - Many foods, such as meat and baked goods, have a date on their packages. This **product date** is an estimate of how long the product is usable. Reduced-price foods should not be a bargain if the product date has already passed.

4. Dietary Recommendations for Specific Disease Conditions

- ***Dietary Approach to Stop Hypertension***

According to the Philippine Society of Hypertension (PSH), more that than 10 million Filipinos are suffering from hypertension and half of them are not aware of their condition. This prompted PSH to recommend a specialized diet plan for adults suffering from abnormal blood pressure (Manongdo, 2010).

The Dietary Approach to Stop Hypertension or DASH is based on studies conducted in four medical centers in the United States. Their findings showed that blood pressures were reduced with an eating plan that is low in saturated fat, cholesterol, and total fat and that emphasizes fruits, vegetables, and fat-free or low-fat milk and milk products (NIH, 2006).

Table 3.4 The Dietary Approach to Stop Hypertension

Food Group	Daily Servings	Serving Size
Grains*	6-8	1 slice bread 1 oz dry cereal† 1/2 cup cooked rice, pasta, or cereal
Vegetables	4-5	1 cup raw leafy vegetable ½ cup cut-up raw or cooked vegetable ½ cup vegetable juice
Fruits	4-5	1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen, or canned fruit ½ cup fruit juice
Fat-free or low-fat milk and milk products	2-3	1 cup milk or yogurt 1 ½ oz cheese
Lean meats, poultry, and fish	6 or less	1 oz cooked meats, poultry, or fish 1 egg‡

Food Group	Daily Servings	Serving Size
Nuts, seeds and legumes	4-5 per week	1/3 cup or 1 ½ oz nuts 2 Tbsp peanut butter 2 Tbsp or ½ oz seeds ½ cup cooked legumes (dry beans and peas)
Fats and oils§	2-3	1 tsp soft margarine 1 tsp vegetable oil 1 Tbsp mayonnaise 2 Tbsp salad dressing
Sweet and added sugars	5 or less per week	1 Tbsp sugar 1 Tbsp jelly or jam 1/2 cup sorbet, gelatin 1 cup lemonade

** Whole grains are recommended for most grain servings as a good source of fiber and nutrients.*

† Serving sizes vary between 1/2 cup and 11/4 cups, depending on cereal type. Check the product's Nutrition Facts Label
‡ Since eggs are high in cholesterol, limit egg yolk intake to no more than four per week; two egg whites have the same protein content as 1 oz of meat.

§ Fat content changes serving amount for fats and oils. For example, 1 Tbsp of regular salad dressing equals one serving; 1 Tbsp of a low-fat dressing equalsone-half serving; 1 Tbsp of a fat-free dressing equals zero servings.

DASH highlights the following:

1. Avoid processed foods that are high in sodium as snack items, luncheon meats, and canned soups
2. Cut down on total fat and saturated fat intake; saturated fat is abundant in meat, cheese, butter, poultry, snack foods and other processed foods
3. Get at least eight to 10 servings of potassium-rich fruits and vegetables
4. Three servings of low-fat dairy products which are high in magnesium and calcium daily.
5. Whole grains, fish, poultry, nuts, seeds and dried beans or legumes are also recommended

Nutritional Guidelines for the Prevention of Heart Diseases and Diabetes Mellitus (FNRI-DOST, 2002)

The guidelines were developed in response to the growing number of Filipinos suffering from diabetes mellitus and heart diseases and highlight the following areas:

1. Eat foods low in fat and cholesterol.
   - Dietary cholesterol should be less than 300 mg per day.
   - Fat should contribute only to 20-25% of total calories in the diet.
   - It is desirable to have fat sources from polyunsaturated fats found in plant such as peanut, soybean, cottonseed, corn and safflower oils and in fish.
   - Consume lean meat, fish or poultry but with all fatty portions removed, milk and milk products and eggs MODERATELY. Rather than fry, boil, pan-broil or bake meats and poultry. Roast meat at low temperature to allow more fat to come out of the meat. Prepare eggs as poached, hard-or soft-boiled.
   - Consume in LIMITED AMOUNTS the following: medium fat meat, fish and poultry, nuts, fats, oils, butter and margarine.
   - Consume the following foods SPARINGLY: high fat foods such as cream and whipped cream, sauces and gravies made with fat drippings, butter, whole milk, coconut milk, deep-fried foods, chicharon and lechon.

2. Increase intake of fiber-rich foods in the daily diet.
   - Carbohydrates-rich foods are good sources of energy, vitamins and minerals; should comprise about 55-70% of total caloric intake.
   - Carbohydrate in the diet should consist mostly of the complex rather than the simple type.
   - Simple carbohydrates or simple sugars should make up 10% of total carbohydrates in the diet; mostly found naturally in fruits, table sugars and products made with it.
     - o Fruits should be taken no more than 3 servings daily
     - o Take fruits in combination with the main meals and spread them out during the day
     - o Artificial sweeteners (aspartame and saccharin)should be used in moderation (1/2 of the allowable dosage).
   - Aspartame up to 50 mg per kilogram of body weight is safe. A can of soft drinks (12oz) has 150 mg of aspartame
   - Allowable level of saccharin is 500 mg/day for children and 1000 mg/day for adults. One teaspoon of saccharin powder contains 14 mg of sweetener
   - Complex carbohydrates are sometimes called "starches" and are found mostly in cereals like rice,

Nutritional Guidelines for the Prevention of Heart Diseases and Diabetes Mellitus

- Eat foods low in fat and cholesterol
- Increase intake of fiber-rich foods in the daily diet
- Limit intake of salty foods

bread, root crops and cereal products. Fiber is also a complex carbohydrate.

- Dietary fiber aids in the elimination of fat and cholesterol. It also helps in reducing blood glucose by bringing about faster emptying of the gastrointestinal tract, delaying intestinal absorption of sugar and enhancing body's sensitivity to insulin.
- Fiber helps in weight reduction by providing early feeling of satiety resulting in lower total caloric consumption.
- Consume the following foods LIBERALLY:
    - o Dark, green, leafy vegetables
    - o Vitamin C rich fruits and vegetables
    - o Legumes
    - o Other fruits and vegetables
    - o Whole grain cereals
- Consume the following foods SPARINGLY:
    - o Simple sugars
    - o "empty calorie" foods like soft drinks and candies

3. Limit intake of salty foods.
    - Salt contains 40% sodium and 60% chloride. Sodium is the bad component in salt and has been known to increase the blood pressure
    - Consume the following in LIMITED AMOUNTS:
        - o Salt-cured foods like tocino, sausage, hotdog, ham, bacon , corned beef and pickled vegetables
        - o Smoked foods like tinapa, smoked ham or bacon
        - o Table salt and other salty condiments such as patis, toyo and bagoong

5. Nutrition Education and Counseling

As a health worker and a role model, you have six responsibilities in promoting healthy nutrition in your community:

1. Educate as many people as possible in your community, particularly mothers, teachers and food handlers on balanced and healthy diet
2. Assess for weight problems and unhealthy nutrition-related practices (refer to Module2);
3. Screen for other risk factors related to nutrition, such as blood cholesterol and glucose levels and hypertension
4. For persons found to be at risk of NCD, advise and counsel for risk modification;
5. Make referrals where appropriate; and
6. Advocate for a supportive environment where healthy food is available and affordable.

Nutrition counseling starts with proper assessment. There are direct and indirect measures of nutritional status. Direct measurements for nutritional status include BMI, waist circumference and waist-hip ratio as discussed in Module 2. In particular, BMI and waist circumference are better indicators of risk than simply using weight. Periodic checks of BMI and waist circumference are advisable.

Indirect measurement of nutritional status involves using the 24-hour food recall method. This method involves asking the client the type and specific amount of food eaten in the previous 24 hours. This way, there will be no problem of recall and data obtained is more accurate. This method also permits calculation of nutritive value of diet and comparison with accepted standards. For an example of a 24-hour food diary form, see Appendix 3.5.

In practice, nutritional assessment is not done routinely (except for weight-taking of children) by primary health care workers because of lack of time and most likely, lack of familiarity with the methods. However, measuring BMI and waist circumference will not take too much time. Having a BMI table within easy reach will also facilitate calculation of BMI. The 24-hour food recall is also a very useful method for individualizing your counseling.

Prioritize whom to assess. If a woman comes in for family planning but is obviously overweight, then take the BMI and WC as well. If this same woman comes back to the clinic after 1-2 months, there is no need to get her BMI and WC again unless there is an obvious change in her weight.

Providing nutrition education to individuals and groups whenever possible is an important responsibility of the health worker. This includes clients who are well, at risk, or even with disease. Target groups for nutrition education include mothers, food handlers and food service people. Educating persons in key positions to influence others like teachers, day care workers, community and civic leaders will also achieve a lot in pushing for lifestyle change.

When planning and conducting health education for a group, the following principles are considered:

Assess the learning needs depending on the characteristics of the group, the readiness to change, the developmental stage and their immediate concerns.
This will also determine the approach and specific strategies you will use. Readiness to learn depends on three major factors: motivation, experiential readiness and physiologic maturation or wellness.

For example, a group of mothers is likely to be interested on meal planning and cooking demonstrations while a group of young males may need information on the harmful effects of excessive alcohol use. Hypertensives will surely benefit from information on modifying diets to limit salt and fat intake.

There are specific learning needs of different client groups. The health worker needs to consider the age-specific differences in order to develop effective teaching strategies.

Child and Adolescent

- Positive reinforcement plays a very important role in learning
  - Behavior that brings pleasure tends to be repeated and are incorporated into the child's repertoire of responses. Eating vegetables and fruits during meals or drinking a glass of milk is rewarded by a favorite toy or an extra hour of watching television or playing a favorite PSP game.
  - Behavior that brings pain and disapproval tends to be suppressed. Spanking a child for not eating vegetables or joking about a child's being overweight will only lead to negative association to the food they eat.
  - Behavior that brings no response tends to be extinguished. Children's positive eating behaviors should be affirmed. "Amy's skin is glowing because she eats fruits and vegetables every day."
- Children learn through imitation especially in the early years of development. If parents snack on junk food, it is likely that children will also crave for these foods.
- School-age children are the ones ready for formal teaching. At this age, social skills can be taught

Principles in planning nutrition education and counseling of different population groups:

- Assess learning needs and readiness to learn
- Select learning activities
- Create a positive climate for learning
- Evaluate learning outcomes

through role play.

- It is important to establish a trusting relationship before an adolescent can participate in a learning process. Adolescents are most vulnerable to body image problems and they seek advice from their friends to improve their self-esteem. Peer teaching or counseling can be adopted as a method of reaching out to them.

Adult Learner

- Adults' readiness to learn is associated with their developmental tasks.
- Adults are more interested to learn things that will help them cope with their present circumstances. They are more receptive if any action will directly result in say, lower blood pressures or blood sugar levels.
- Adults do not want to waste time learning something that do not have direct relevance to their current lives or situation.
- Adults learn better when they are given life-centered or task-centered problems.
- Experiences in adults' life help them to learn more; theories mean nothing unless illustrated by experiences and applied in real life. Calculating diets or calorie counting may seem too trivial or even academic for them, but if they recognize the importance of these exercises in weight management, they will simply decide to do them.

Select learning activities. Any nutrition education involving different age groups should consider the use of varied teaching-learning strategies that will make learning not only interesting but fun.

- Match learning activities with learning objectives.
- Keep the patient involved through discussion, role play, games and media.
- Test the patient's new abilities to help him feel a sense of accomplishment. Try to build success and reinforcement into patient education.
- Make learning fun. Humor and support decrease the learner's anxiety and help him to learn at his own pace.
- Allow ample time to practice skills, but determine how safely the patient will be able to perform new skills at home.
- Incorporate methods other than lecture alone to teach skills and develop patient's attitudes

Create a climate for learning. While conducting nutrition education, pay attention to the client's physical comfort and emotional needs. In order to ensure skill development, utilize a problem-centered approach while providing plenty of opportunities for application of learning. Participative learning guarantees the achievement of learning objectives.

Evaluate learning outcomes. Outcomes of nutrition education are measured by the behavior changes

demonstrated by the clients in terms of healthy nutrition practices and hopefully, be translated in terms of reduction in the incidence and prevalence of major NCDs in the community.
It is also not enough to perform risk assessment and screening of individuals. Whenever you screen, there is ethical responsibility to assist and provide support to individuals who turn out to be at risk or positive for disease. One intervention is to provide nutrition counseling.

Counseling is a more individualized health education and addresses the specific problem of the client. ***As a primary health worker, you are not expected to do extensive nutrition counseling. If this is required, referral to the nutritionist is the appropriate action. However, you should be able to provide specific information and assist the person to modify his/her risk.***

6. Advocating for a Nutrition-friendly Environment

Sometimes, providing nutrition education or counseling to individuals is not enough to promote healthy nutrition. The environment plays a major role in influencing nutrition-related behavior, particularly in the availability and access to healthy food. For example, it is easy to tell people to increase their intake of fruits and vegetables, but it may be difficult to get these foods on the table because they are expensive and not available. It may also be difficult to limit intake of fats, salt and processed foods if they are readily available or more convenient to people. With the mushrooming of fast food establishments and instant foods, people are not more careful of what they eat.

What can you do then as a health worker? Aside from educating the people on the effects of an unhealthy diet, you could encourage behaviors such as vegetable gardening or advocate for healthy environment.

Encourage Vegetable Gardens

- Advise people to have vegetable plots in their backyard. Aside from being a healthy outdoor activity, it would provide the cheapest and most accessible source of fruits and vegetables. Encourage organically grown vegetables.
- Support government programs that encourage gardening and vegetable farming. Secondary to increasing availability of vegetables and fruits, it would help lower their prices with the abundance of supply.
- Collaborate with the Department of Agriculture and other government agencies to help conduct trainings and seminars as to the proper way of growing fruits and vegetables (e.g. which plant would survive in which type of soil and other conditions such as amount of water and minerals that specific plants need).Fruits and vegetables can also be promoted as special prizes or rewards in school affairs and in certain barangay events, such as fiestas and other public celebrations.

Campaign for Nutrition-friendly Environment

There are ordinances regarding the putting up of commercial establishments, such as fast food buildings or stalls.

- Campaign for proper zoning to limit these food establishments.
- Encourage selling of farm products produced in your area, making sure they are fresh and safe. Fresh foods are usually more nutritious and safe from all the chemical additives present in processed foods.

Advocate for Healthy Policies for Nutrition

Strict implementation of school policies is also critical. Health workers play key roles in advocating and influencing school and local government officials. Some of these policies include:

- prohibiting drinking of alcoholic beverages,
- providing healthy food options and limiting availability of soft drinks and junk foods in the school canteen, and
- prohibiting students from buying from street vendors during lunch breaks.

At the workplace, health workers should advocate and talk employers into providing more attention into the health and wellness status of employees by implementing programs as simple as serving nutritious meals or snacks during meetings or conferences or in the cafeteria, conducting seminars or lectures on promoting healthy lifestyle or even organizing regular physical fitness or exercise programs before or after office/work hours.

The National Nutrition Council (2009) specified several issues that health workers can use as springboard in advocating for an environment supportive of consumption of healthy diets:

- Develop and implement food and agriculture policies that enable adequate production and domestic supply of fruits, vegetables and whole grain cereals that are affordable to all segments of the population
- Review and implement policies to promote positive effects of agriculture and trade policies on nutrition and health
- Employ measures to regulate the use of hydrogenation of oils and fats intended for dietary consumption or manufacture of food products; encourage the reduction of use of salt
- Enact and enforce measures towards mandatory labeling of food products with clear codes to enable consumers to readily identify products with high sodium, fat and sugar and caloric content.
- Develop and implement policies involving urban planning and transport to create facilities for supporting physical activity for all people of all ages
- Review and update dietary and nutritional guidelines
- Watch over media to ensure that food and beverage advertising does not encourage unhealthy food practices and false nutrition claims
- Ensure that foods used in food distribution/subsidy programs should be healthy
- Give recognition to food establishments which provide healthy food options to consumers

References

De Guzman, M.P.E.; Claudio, V.S.; Oliveros, M.S.; & Dimaano, G.P. (1988). Basic Nutrition for Filipinos. 3rd edition, Merriam & Webster, Inc.: Philippines.

Hales, D.R. (1997), An Invitation to Health. 7th edition, Brooks/Cole Publishing Company: Pacific Grove, CA

Pruitt, B.E.; Crumpler, K.T.; & Prowthrow-Smith, D. (1997). Health skills for Wellness. Prentice Hall: USA.

Schlundt, D. cited in Hales, D.R. (1997), An Invitation to Health. 7th edition, Brooks/Cole Publishing Company: Pacific Grove, CA

Department of Health Philippines (DOH). The National Cardiovascular Disease Prevention and Control Program: Manual for training of health personnel. (1994).

Food and Nutrition Research Institute/ Department of Science and Technology (FNRI/DOST). Food Exchange Lists for Meal Planning. (1994)

Food and Nutrition Research Institute/ Department of Science and Technology (FNRI/DOST). Nutritional Guidelines for the Prevention of Heart Diseases and Diabetes Mellitus. (1991, Revised 2002).

Food and Nutrition Research Institute/Department of Science and Technology (FNRI/DOST) and the Non-Communicable Disease Control Service/Department of Health(NCDCS/DOH). Nutritional Guidelines for Prevention of Cancer. (1993).

Food and Nutrition Research Institute/Department of Science & Technology(FNRI/DOST). Daily Nutritional Guidelines for Filipinos, Copyright 2008. http--www_fnri_dost_gov_ph (accessed 29 July 29, 2010)

Food and Nutrition Research Institute/Department of Science and Technology (FNRI/DOST). 7TH National Nutritional Survey. 2008.

Food and Nutrition Research Institute/Department of Science & Technology (FNRI/ DOST). Philippine Nutrition Facts & Figures. (2001).

Manongdo, JF. DASH diet for hypertensive Filipinos. May 16, 2010 http://www.mb.com.ph/node/25763/da (accessed 18 July 2010)

National Nutrition Council. 2009 Nutrition Month Talking Points http://www2.goh.gov.ph/nnc/ (accessed 18 July 2010)

National Nutrition Council. 2010 Nutrition Month Talking Points. http://www.nnc.da.gov.ph (accessed 18 July 2010)

Pedro, MRA; Benavides, RC; Barba, CVC. Dietary Changes and health implications: An emerging double burden of under- and over-nutrition. FAO Food and Nutrition Paper 84. Food and Agriculture Organization of the United Nations, Rome (2006) http://www.fao.org/docrep/009/a0442e/a0442e0p.htm#TopOfPage. (accessed 5 June 2010)

Torres, Ma Zorayda, "Watch That Fat in Your Diet" http://www.fnri.dost.gov.ph (accessed 13 August 2010)

US Department of Health and Human Services. National Institutes of Health. National Heart, Lung and Blood Institute. Your Guide to Lowering Your Blood Pressure: The DASH Eating Plan. NIH Publication No. 06-4082 Originally Printed 1998, Revised April 2006

Willet, WC and Ascherio, A, "Trans Fatty Acids: Are the Effects Only Marginal?", American Journal of Public Health, Vol 84, No 5, May 1994

World Health Organization. Global strategy on diet, physical activity and health. Fifty-Seventh World Health Assembly, Eighth plenary meeting, 22 May 2004 – Committee A, third report. http://www.who.int (accessed 19 March 2010)

Appendix 3-1a
Estimating Desirable Body Weight

The handbook "Food Exchange Lists for Meal Planning" (DOST-FNRI, 1994) described several ways of estimating desirable body weight. The health worker can use any of these to help clients understand the importance of having to maintain weight for health promotion and wellness.

1. **Use of Standard Tables:** The FNRI Standard Weight for Filipinos cover the age group 25-65 years old and is based on weight-for-height. A ±% of the value obtained will be within the range of the desired body weight.

2. **Tannhauser's (Broca) Method estimates the desired body weight using the height of the individual.**

   a. Measure the height in centimeters.

> Example: If an adult male stands 5 feet 6 inches, his height in centimeters is 167.64
>
> Height = 5 feet 6 inches = 66 inches
> = 66 inches x 2.54 centimeters
> = 167.64 centimeters

   b. Estimate the desired body weight.

> i. Deduct 100 from the computed height in centimeters
> DBW = 167.64 -100
> = 67.64 kilograms
>
> ii. To apply this DBW to Filipino stature, deduct 10%
> DBW = 67.64 kilograms – 10% of 67.64
> = 67.64 kilograms – 6.76
> = 60.88 or 61 kilograms
>
> **Thus, an adult who stands at 5 feet 6inches will have an estimated desired body weight of 61 kilograms.**

3. Using a derived formula based on Body Mass Index (BMI)

a. Determine the BMI using the formula:

BMI=wt (kg)/ht (m^2)

Consider the following conversions:

1 ft = 0.3048 m
1 in = 2.54 cm
1 lb = 0.4536 kg

Example: If a female weighs 120 lbs and is 5"0", what is her BMI?

weight=120 lbs x 0.4536 = 54.43 kilograms
height=5 feet x 0.3048 =1.524 meters

BMI = $54.43/(1.524)^2$
= 54.54/2.322576
= **23.44**

The desirable BMI is 18.6 -22.9. (DOH, MOP on NCD Prevention and Control, 2009). However, the FNRI (1994) specified the desirable BMI for men as 22 and for women as 20.8. **Therefore, a BMI of 23.44 means that she is at risk of developing non-communicable disease.**

b. Determine DBW using the formula:

DBW = Desirable BMI x H $(m)^2$

Following above example, what is her DBW if her desirable BMI is 20.8?

DBW = 20.8 x $(1.524)^2$
= 20.8 x 2.322576
= 48.3095808 or 48.31 kilos

The desirable body weight for a female whose height is 5 feet tall is 48.31 kilos. Therefore, she is 12.67% in excess of her DBW.

4. Using the NDAP formula which gives the closest approximation of the desirable BMI as well as midpoint of FNRI's range of reference weights.

a. DBW for men 5 feet tall is 112 lbs. Add or subtract 4lbs for every inch above or below 5 feet.
b. DBW for women 5 feet tall is 106 lbs. Add or subtract 4 lbs. for every inch above or below 5 feet.

Appendix 3.1b
Determining Reasonable Energy Allowance of an Individual (FNRI-DOST, 1994)

How many calories do you need daily?*

To determine the reasonable energy allowance of the individual, multiply his desired body weight (DBW) with the following values, according to:

Activity	Kcal/kg DBW/day
Bed rest but mobile (hospital patients)	27.5
Sedentary (mostly sitting)	30.0
Light (tailor, nurse, physician, jeepney driver)	35.0
Moderate (carpenter, painter, heavy housework)	40.0
Very active (swimming, lumberman)	45.0

To determine the energy contribution of carbohydrates, protein and fat in the total energy allowance, use the percentage distribution as follows:

Carbohydrates	55 – 70% of total energy allowance
Proteins	10 – 15% of total energy allowance
Fats	20 – 30% of total energy allowance

Calculate the number of grams of CHO, Protein and Fats by dividing the calories for each nutrient by the corresponding physiological fuel value:

Carbohydrates	4 kcal/gram
Protein	4 kcal/gram
Fat	9 kcal/gram

Source: Food Exchange Lists for Meal Planning, DOST-FNRI; 1994

Appendix 3.1c
Calculated Diets for Quick Reference+

Food Exchanges

Prescription	VEG		FRUIT	MILK	SUGAR	RICE	MEAT		FAT
	A	B					LF++	MF+++	
6300 kj 1500 kcal 245-55-35	2	1	4	1	5	7	3	1	3
6700 kj 1600 kcal 260-60-35	2	1	4	1	6	7-1/2	3-1/2	1	3
7100 kj 1700 kcal 275-65-40	2	1	4-1/2	1	6	8	3	2	3
7500 kj 1800 kcal 290-70-40	2	1	4-1/2	1	6-1/2	8-1/2	3-1/2	2	3
7900 kj 1900 kcal 310-70-40	2	1	5	1	7	9	3-1/2	2	3
8400 kj 2000 kcal 325-75-45	2	1	6	1	8	9	4	2	4

\+ Refers to grams of carbohydrate, protein and fat respectively which follows the % distribution of 65% CHO, 15% PRO and 20% Fat.

++ Low fat

+++ Medium fat

Source: Food Exchange Lists for Meal Planning (3rd Revision)
Department of Science and Technology, FNRI Publication No.57 ND 8(3) 1994

Note: For individualized diet computation, refer to Nutritionist-Dietitian.

Appendix 3.1c
Calculated Diets for Quick Reference+

Food Exchanges

Prescription	VEG		FRUIT	MILK	SUGAR	RICE	MEAT		FAT
	A	B					LF++	MF+++	
8800 kj 2100 kcal 340-80-50	2	1	6	1	8-1/2	9-1/2	4-1/2	2	4-1/2
9200 kj 2200 kcal 360-80-50	2	1	6-1/2	2	9	9-1/2	4-1/2	1	4
9600 kj 2300 kcal 375-85-50	2	1	7	2	9	10	5	1	4
10000 kj 2400 kcal 390-90-55	2	1	7	2	9	10	5	1	4

++ Low fat

+++ Medium fat

Source: Food Exchange Lists for Meal Planning (3rd Revision)
Department of Science and Technology, FNRI Publication No.57 ND 8(3) 1994

Note: For individualized diet computation, refer to Nutritionist-Dietitian.

Appendix 3.1d
Composition of Food Exchanges

List Food	Measure	CHO (g)	PRO (g)	Fat (g)	Energy (kcal)	Energy (kj)
I. A. Veg, A	1 cup raw ½ cup, cooked	-	-	-	-	-
I. A. Veg. A	2 cups raw 1 cup cooked or	3	1	-	16	67
I. B Veg. B	½ cup, raw ½ cup cooked	3	1	-	16	67
II. Fruit	varies	10	-	-	40	167
III. Milk						
whole	varies	12	8	10	170	711
lowfat	4 tablespoons	12	8	5	125	523
skimmed	varies	12	8	tr	80	335
IV. Rice	varies	23	2	-	100	418
V. Meat						
Low fat	varies	-	8	1	41	172
Med fat	varies	-	8	6	86	360
High fat	varies	-	8	10	122	510
VI. Fat	1 teaspoon	-	-	5	45	188
VII. Sugar	1 teaspoon	5	-	-	20	84

Source: Food Exchange Lists for Meal Planning (3rd Revision)
Department of Science and Technology, FNRI Publication No.57 ND 8(3) 1994

Appendix 3.2
Summary of the Major and Micro Nutrients and their Functions, Types and Sources

NUTRIENTS	FUNCTIONS	TYPES & SOURCES
1. Carbohydrates	Main sources of energy, providing 40- 80% of the total energy intake in different countries (Joint FAO/WHO, 1973). In the Philippines, accounts for an average of 74% of total energy intake (Villavieja, 1996). Spare protein from being converted to glucose for energy.	A. Starch one of the main type of complex carbohydrates (polysaccharides). Grains and grain products for example, rice, cereals, and breads are excellent sources of starch. Can also be found in many plant foods, such as potatoes. When you eat foods containing starch, your digestive system breaks the starch into simple sugars that can be absorbed in your bloodstream. B. Sugars include monosaccharides, such as glucose (major provider of energy for body's cells) and fructose; and dissacharides, such as sucrose (table sugar), maltose and lactose (milk sugar). Sugars occur naturally in fruits, vegetables, and milk. They are added to many manufactured foods, such as cookies, candy, and soft drinks. C. Fiber provides bulk resulting in the modulation of peristalsis and the prevention of constipation; can also increase satiety. Soluble fiber (known to have cholesterol- lowering effects) is found in beans, legumes, some fruits such as apples and some grains such as oats, rye, and barley. Insoluble fiber (which reduces possibility of potential carcinogens to interact with the mucosal surface) is found in vegetables, whole wheat grain, wheat, and corn bran
2. Fats	Concentrated source of energy, providing 9kcal per gram. Provides essential fatty acids, linoleic and linolenic acids that have important functions in the body. Helps absorb, transport, and store fat- soluble vitamins A, D, E, and K.	A. Unsaturated fats including mono-unsaturated and polyunsaturated fats have fewer than the maximum possible number of hydrogen atoms in their structure. Unsaturated fats are usually liquid at room temperature. Most vegetable oils, nuts, and seeds are sources of unsaturated fats. B. Saturated fats--contain as many hydrogen atoms in their structures is chemically possible. Animal fat, such as that in beef, pork, chicken lamb, and dairy products, has high saturated fat content. Usually saturated fats are solid at room temperature. Saturated fats can affect the cholesterol level in the blood. Cholesterol is a waxy, fat-like substance

NUTRIENTS	FUNCTIONS	TYPES & SOURCES
		found in the cells of all animals. It is not present in plants. Although the body needs some cholesterol, elevated levels of cholesterol in the blood frequently are associated with heart disease. Only foods that come from animals, such as meats, dairy products, and eggs, actually contain cholesterol
3. Proteins	Essential for growth and repair of body tissues. Function as enzymes and hormones in the regulation of body processes. Source of energy, giving 4 kcal per gram (if energy intake is inadequate, dietary and body protein may be broken down to be used as a source of energy).	The proteins in the body are made up of about 20 different amino acids (building blocks of protein). The diet has to supply 9 of these essential amino acids, the body can manufacture the rest. Complete protein--contains all 9 essential amino acids in proportions needed to make human proteins. Protein from animal sources (meats, fish), and from beans and legumes like mongo and other dried beans including soy beans is complete protein. High-protein foods include meats, eggs, poultry, milk, and milk products, such as yogurt and some cheeses. Nuts, dried beans, dried peas, and lentils also contain a lot of protein. Incomplete protein--lacks one or more essential amino acids. Rice and wheat flour products which have lower quality of protein are examples.
4. Vitamins	Nutrients made by living things, required only in small amounts, and assist many chemical reactions in the body. (please refer to appendix page for specific roles and functions in the body).	A. Fat-soluble group vitamins that dissolve in fatty materials; includes vitamins A, D, E, and K.Fat-soluble vitamins can be stored by the body. They occur naturally in foods such as vegetable oils, liver, eggs, and certain vegetables. B. Water-soluble group vitamins that dissolve in water. Vitamin C and all of the B vitamins are water-soluble. The body cannot store water-soluble vitamins. Because of this, it is important for you to eat foods that supply these vitamins on a daily basis.Fruits, vegetables, and red meats are good sources of many water-soluble vitamins
5. Minerals	Nutrients that are not manufactured by living things, required by the body only in small amounts also. Involved in a wide variety of biochemical processes within the body (please refer to appendix page for specific roles and functions in the body).	Macro-minerals (e.g. calcium and phosphorus which account for 0.05% or more of total body weight). Micro-minerals (e.g. iron and iodine which account for much less than 0.05% of body weight).

NUTRIENTS	FUNCTIONS	TYPES AND SOURCES
6. Water	Helps regulate temperature, transport electrolytes and other nutrients, excrete waste products from the lungs, skin, and kidneys, lubricate joints, and cushion the nervous system. Most essential nutrient because absence of water causes death more quickly than the absence of any other nutrient.	Water intake from fluid and foods is governed by thirst and should balance output. For good health, water must be consumed everyday to replace the continuous loss of water in urine, perspiration, exhaled air and feces. Water (fluid) requirement ranges from 110 ml/kg for infants to 25 ml/kg body weight for adults (about 3 glasses of fluids for infants; 6-8 glasses for adults).

Appendix 3.3
DAILY NUTRITIONAL GUIDE PYRAMIDS

3.3.1 Filipino Children (1-6 years old)

3.3.2 Filipino Children (7-12 years old)

3.3.3 Filipino Children (13-19 years old)

3.3.4 Filipino Adults (20-59 years old)

3.3.5 Filipino Older Persons (60-69 years old)

3.3.6 Filipino Pregnant Women

3.3.7 Filipino Lactating Women

Appendix 3.4
Classification of Philippine Foods According to Cholesterol Content

- Very high cholesterol (300 mg and above per 100gm edible portion)
  - o meat: carabao brain, cow brain, carabao lungs
  - o eggs: quail, duck, chicken, balut, salted duck's egg

- Moderately high cholesterol (200-299 mg per 100gm edible portion)
  - o meat: cow spleen/lung/kidney, pig spleen/lungs, carabao spleen/liver
  - o poultry: chicken liver

- Lower amounts of cholesterol (100-199 mg per 100gm edible portion)
  - o meat and poultry: cow liver/small intestines, carabao kidney, chicken heart/gizzards, pig liver/small intestines/uterus/large intestine/heart/tongue
  - o fish and shellfish: small fresh water prawn, large crab, small shrimps, common spadefish (kitang), flat-headed goby (biya)

- Lowest cholesterol content (99 mg and below 100 gm edible portion)
  - o meat: cow / carabao tongue, cow / carabao uterus, lean beef and pork; cow / carabao large intestines; librilyo; pork liempo
  - o fish and shellfish: talangka, palos, alimasag , salmon tulya, lapu-lapu, kuhol, espada, swahe, banak, talaba, tilapia, hito, tuna, freshwater prawn , tahong, karpa, dilis, bangus, tangigue
  - o poultry: chicken meat, egg white

Appendix 3.5
Foods High in Sodium (400 mg per serving)

- Salted spices (garlic, salt, onion salt, seasoned salt)
- Soy sauce
- Teriyaki sauce
- Fish sauce (patis)
- Fish paste (bagoong isda
- Shrimp paste (alamang)
- Monosodium glutamate (vetsin)
- Salted crackers and chips
- Salted popcorn
- Bacon
- Corned beef
- Ham
- Luncheon meat
- Sausages
- Cottage cheese
- Parmesan cheese
- Processed cheese foods
- Baking powder/baking soda
- Bouillon broth cubes and other packaged soup mixes
- Carbonated diet beverages
- Catsup
- Commercial gelatin
- Meat sauces
- Miso
- Pickles
- Tausi

Appendix 3.6
24-HOUR FOOD DIARY FORM

Name of Client: _____
Age: _____
Date: _____

Instructions: Interview client and ask the amount of food eaten and beverages taken in the last 24 hours. For the number of exchanges, refer to the Food and Exchange List for Meal Planning of FNRI.

	Food Taken (specify)	Amount (Number of servings)	Food Group	Exchanges (Number)	Calories
Breakfast					
A.M. Snacks					
Lunch					
P.M. Snacks					
Dinner					
Bedtime Snacks					