Preventive Medicine

Consultation for diet

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Outline

- Healthy diet and nutritional counseling
- Nutritional assessment
- Dietary reference intakes
- Nutrients and supplements
- Food label
- Choose MyPlate
- Calculate recipes

Diet


















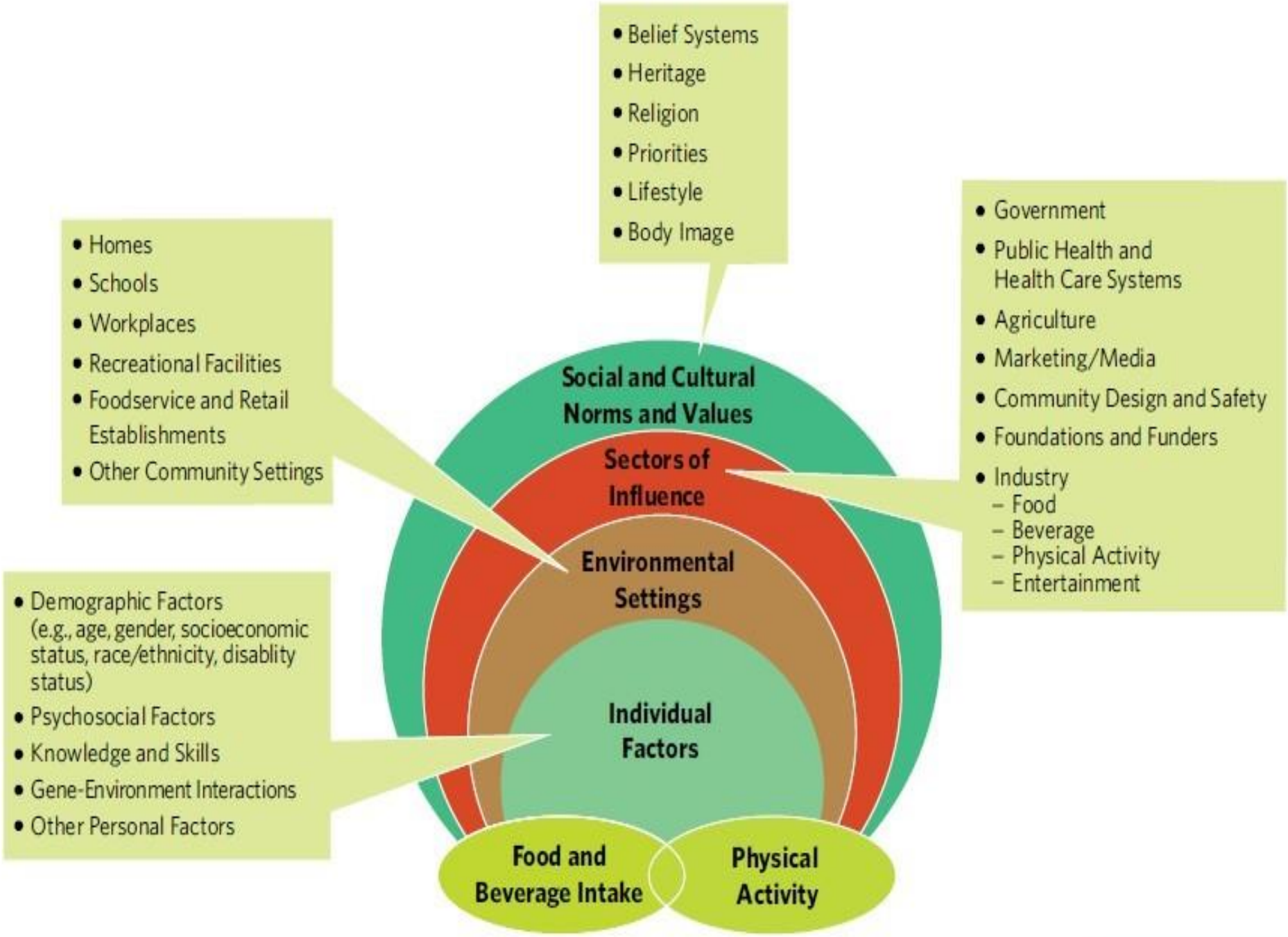
• Belief Systems
• Heritage
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• Homes
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– Food
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– Physical Activity
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Social and Cultural Norms and Values
Sectors of Influence
Environmental Settings
Individual Factors
• Demographic Factors (e.g., age, gender, socioeconomic status, race/ethnicity, disablity status)
• Psychosocial Factors
• Knowledge and Skills
• Gene-Environment Interactions
• Other Personal Factors
Food and Beverage Intake
Physical Activity

Terms

- Diet: selection of food that is normally eaten by a person or population
- Nutrients: elements in foods that are required for the growth, repair, and regulation of body processes
- Nutrition: process by which a living organism receives nutrients and uses them to promote its vital activities

Importance of diet assessment

- To track:
  - Population intake (epidemiology)
  - Individual intake (diet counseling)

Importance of nutrition counseling

- A clinician's advice on nutrition is of great importance in helping patients to modify dietary practices.
- Short and useful recommendations can be as simple as:
  - Do not crash diet
  - Eat real foods
  - Watch your portion size
  - Eat breakfast

Nutrition counseling

- Adopting a healthy diet can be simple but is not always easy.
- Patients become discouraged when they attempt to change too many eating habits at once.
- Advocate small steps

Primary screening question

- Tell me about your typical diet?
- How many servings of fruits and vegetables do you eat in a typical day?
- Do you typically try to avoid fatty foods?

It is difficult to ask a single question that identifies the patients need

Those that most affect the patient's future health are total calories, fat, and fruits and vegetables

Behavioral steps for a healthy diet

- **Food preparation**
- **Meal time**
- **Snacking at home**
- **Emotional snacking**

Preplan your meals

Preload your stomach with liquids and drink ample liquids during meals

Learn to cook the caloric-reduced way

Use smaller plates,bowls,glasses and serving spoons

Include low-calorie foods at each meal

Do not keep serving dishes on the table

Keep eating tools out of the house

Shop when your control in highest and have a list

Stop eating for a minute during the meal

Eat three healthy meals a day

Brush your teeth after every meal and use mouthwash

Leave a little food on your plate(doggy bag)

Use relaxation exercises

Preplan snacks into your eating plan

Take a warm bubbble bath

Try sugar-free gum,hard candy,diet soda, or fruit when craving sweets

Listen to relaxing music

Get out of the house

Exercise every day

Ask family and friends not to offer you snacks

Talk to yourself

How is accuracy a problem?

- People cannot remember
- Difficult to estimate portions
- A given food may vary (% of fat in meat)
- Some foods difficult to deconstruct

Nutritional Assessment

- Purpose:
  - To comprehend human dietary intake compared to human dietary allowance
  - To understand human health status related to nutritional status.
  - To find out misbalance humans.
  - To make special scientific research.

Direct Methods of Nutritional Assessment

- These are summarized as ABCD
  - **A**nthropometric methods
  - **B**iochemical, laboratory methods
  - **C**linical methods
  - **D**ietary evaluation methods

Anthropometric Methods

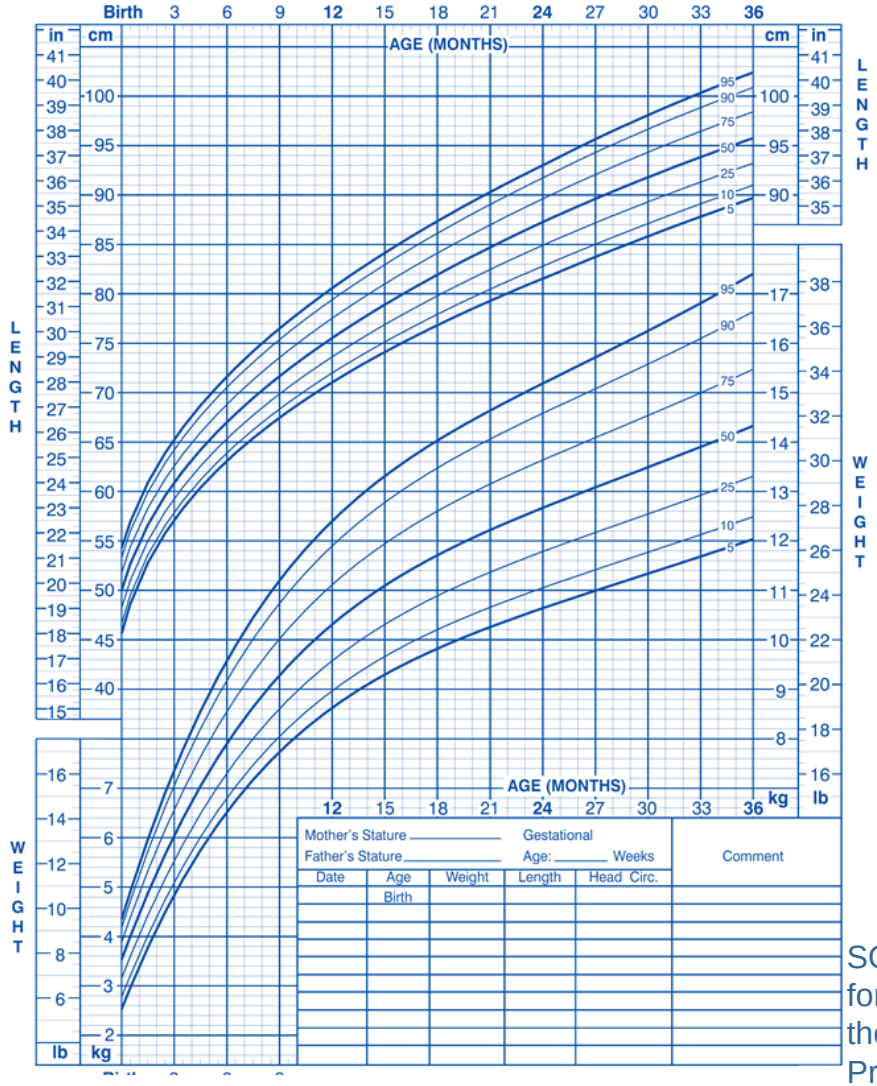
- Anthropometry is the measurement of body height, weight & proportions.
- It is an essential component of clinical examination of infants, children & pregnant women.
- It is used to evaluate both under & over nutrition.
- The measured values reflects the current nutritional status & don’t differentiate between acute & chronic changes .

Anthropometry for children

- Accurate measurement of height and weight is essential.
- The results can then be used to evaluate the physical growth of the child.
- Growth monitoring chart:
  - growth velocity
  - compare to international standards

Growth monitoring chart

0-36 months
Boys



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

Nutritional Indices in Adults

- The international standard for assessing body size in adults is the **body mass index** (BMI).
  - BMI = Weight (kg)/ Height (m^2)
  - High BMI (obesity level) is associated with type 2 diabetes & high risk of cardiovascular morbidity & mortality

BMI (WHO - Classification)

- BMI < 18.5 = Under Weight
- BMI 18.5-24.5 = Healthy weight range
- BMI 25-30 = Overweight (grade 1 obesity)
- BMI >30-40 = Obese (grade 2 obesity)
- BMI >40 = Very obese (morbid or grade 3 obesity)

“The Y-Y Paradox”

22.3	BMI	22.3
9.1%	BODY FAT	21.2%

Source: Yajnik CS, Yudkin J: The Y-Y Paradox. Lancet (2004) 363:163

Waist circumference

- Waist circumference predicts mortality better than any other anthropometric measurement.
- It has been proposed that waist measurement alone can be used to assess obesity, and two levels of risk have been identified

	MALES	FEMALE
LEVEL 1	> 94cm	> 80cm
LEVEL2	> 102cm	> 88cm

Waist circumference/2

- Level 1 is the maximum acceptable waist circumference irrespective of the adult age and there should be no further weight gain.
- Level 2 denotes obesity and requires weight management to reduce the risk of type 2 diabetes & CVS complications.

Body fat measurement

- Young adult men normally have a body fat percentage of 10 to 15 percent.
- The normal range for young adult women is 22 to 25 percent.
- The higher percentage of fat typically found in women is related to preparation for pregnancy and breastfeeding.
- When a man's body fat is higher than 20 percent and a woman's body fat is above 30 percent, these people are considered to be obese.

Other anthropometric Measurements

- Mid-arm circumference
- Skin fold thickness
- Head circumference
- Head/chest ratio
- Hip/waist ratio

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Biochemical assessment of nutritional status

- Hemoglobin estimation is the most important test, & useful index of the overall state of nutrition. Beside anemia it also tells about protein & trace element nutrition.
- Stool examination for the presence of ova and/or intestinal parasites
- Urine dipstick & microscopy for albumin, sugar and blood

Specific Lab Tests

- Measurement of individual nutrient in body fluids (e.g. serum retinol, serum iron, urinary iodine, vitamin D)
- Detection of abnormal amount of metabolites in the urine (e.g. urinary creatinine/hydroxyproline ratio)
- Analysis of hair, nails & skin for micro-nutrients.

Advantages of Biochemical Method

- It is useful in detecting early changes in body metabolism & nutrition before the appearance of overt clinical signs.
- It is precise, accurate and reproducible.
- Useful to validate data obtained from dietary methods e.g. comparing salt intake with 24-hour urinary excretion.

Limitations of Biochemical Method

- Time consuming
- Expensive
- They cannot be applied on large scale
- Needs trained personnel & facilities

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Clinical Assessment

- It is an essential features of all nutritional surveys
- It is the simplest & most practical method of ascertaining the nutritional status of a group of individuals
- It utilizes a number of physical signs, (specific & non specific), that are known to be associated with malnutrition and deficiency of vitamins & micronutrients.

Clinical Assessment/2

- Good nutritional history should be obtained
- General clinical examination, with special attention to organs like hair, angles of the mouth, nails, skin, eyes, tongue, muscles, bones, & thyroid gland.
- Detection of relevant signs helps in establishing the nutritional diagnosis

Clinical signs of nutritional deficiency

- Hair
  - Spare & thin: Protein, zinc, biotin deficiency
  - Easy to pull out: Protein deficiency
- Nails
  - Spooning: Iron deficiency
  - Transverse lines: Protein deficiency

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Dietary Assessment

- Nutritional intake of humans is assessed by five different methods. These are:
  - 24 hours dietary recall
  - Food frequency questionnaire
  - Dietary history since early life
  - Food dairy technique
  - Observed food consumption

24 Hours Dietary Recall

- A trained interviewer asks the subject to recall all food & drink taken in the previous 24 hours.
- It is quick, easy, & depends on short-term memory, but may not be truly representative of the person's usual intake

Food Frequency Questionnaire

- In this method the subject is given a list of around 100 food items to indicate his or her intake (frequency & quantity) per day, per week & per month.
- inexpensive, more representative & easy to use
- But…
  - long Questionnaire
  - Errors with estimating serving size
  - Needs updating with new commercial food products to keep pace with changing dietary habits

Dietary History

- It is an accurate method for assessing the nutritional status.
- The information should be collected by a trained interviewer.
- Details about usual intake, types, amount, frequency & timing needs to be obtained.
- Cross-checking to verify data is important.

Food Dairy

- Food intake (types & amounts) should be recorded by the subject at the time of consumption.
- The length of the collection period range between 1-7 days.
- Reliable but difficult to maintain.

Observed Food Consumption

- The most unused method in clinical practice, but it is recommended for research purposes.
- The meal eaten by the individual is weighed and contents are exactly calculated.
- The method is characterized by having a high degree of accuracy but expensive & needs time & efforts.

Interpretation of Dietary Data

- Qualitative Method
  - using the food pyramid & the basic food groups method.
  - Different nutrients are classified into 5 groups (fat & oils, bread & cereals, milk products, meat-fish-poultry, vegetables & fruits)
  - determine the number of serving from each group & compare it with minimum requirement.

Interpretation of Dietary Data/2

- Quantitative Method
  - The amount of energy & specific nutrients in each food consumed can be calculated using food composition tables & then compare it with the recommended daily intake.
  - Evaluation by this method is expensive & time consuming, unless computing facilities are available.

D-E-T-E-R-M-I-N-E

- Checklist to help older adults identify symptoms of nutritional problems
- To remind you of the warning signs

D-E-T-E-R-M-I-N-E

- Disease
- Eating poorly
- Tooth loss/mouth pain
- Economic hardship
- Reduced social contact
- Multiple medicines
- Involuntary weight loss/gain
- Needs assistance in self-care
- Elderly, age above 80 years

Dietary Reference Intakes

- The Dietary Reference Intakes (DRI) are a set of **nutrient intake values** for **healthy people** in the United States and Canada.
- These values are used for planning and assessing diets.
- Generic term used to refer to multiple values including:
  - Estimated Average Requirements (EAR)
  - Recommended Dietary Allowances (RDA)
  - Adequate Intakes (AI)
  - Tolerable Upper Intake Levels (UL)

Estimated Average Requirement

- Estimated Average Requirement (EAR).
  - The EAR is the average amount of a nutrient that will maintain a specific biochemical or physical body function in half the healthy people of a given age and gender group.

Recommended Dietary Allowance

- Recommended Dietary Allowance (RDA).
  - The RDA is the average daily amount of a nutrient adequate to meet the nutrient needs of practically all healthy people for a given age and gender group.
  - The RDA can satisfied 97-98% of the individuals.
  - The RDA is a goal for dietary intake by individuals.

Adequate Intake

- Adequate Intake (AI)
  - For some nutrients there is insufficient evidence to determine an EAR and thus an RDA. In these cases, an Adequate Intake (AI) was established.
  - The AI reflects the average amount of a nutrient a group of healthy people consumes.
  - The AI may be used a nutrient goals for individuals.

Tolerable Upper Intake Level

- Tolerable Upper Intake Level (UL)
  - The UL is the maximum level of daily nutrient intake that is unlikely to pose risks to almost all individuals for a given age and gender group.
  - The UL is not intended to be a recommended level of intake, and there is no established benefit for individuals to consume nutrients at levels above the RDA or AI.

Tolerable Upper Intake Level

- The UL refers to total intakes from food, fortified food and nutrient supplements.
- The need for setting Tolerable Upper Intake Levels grew out of the increased practice of fortifying foods with nutrients and the use of dietary supplements by more people and in larger doses.

What are Calories?

Calories: units of heat (energy); are a measure of the amount of energy provided from food

- Fats provide 9 calories per gram
- Carbohydrates provide 4 calories per gram
- Proteins provide 4 calories per gram

Individuals have different calorie needs based on:

Gender, Size, Age, Physical Activity

Condition (ie – pregnancy, lactating)

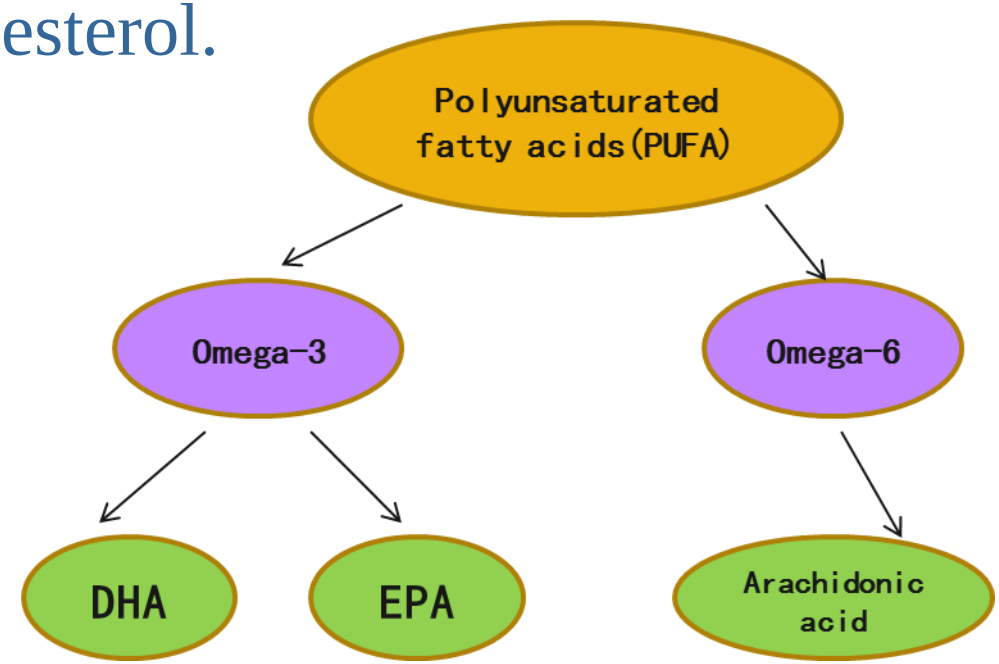
Calories

Calorie balance occurs when Calories IN = Calories OUT

- If IN > OUT = Weight gain occurs
- If IN < OUT = Weight loss occurs

Other nutrients

- Protein
- Fat
- Lipids, include triglycerides, fatty acids, phospholipids and cholesterol.
- Carbohydrates
- Fiber
- Vitamins
- Minerals



Should I take a supplement?

- Question
- Do you take a daily multivitamin/multimineral pill because you are concerned about the nutritional quality of your diet?
- Do you use herbal pills or extracts to strengthen your immune system?
- Make comments on the supplement.

Supplement

- Unless there are special circumstances, such as pregnancy, lactation, infancy, or an existing health problem, nearly everyone who eats a reasonably well-rounded diet consumes enough vitamins to prevent deficiencies.
- Consuming an adequate amount of folic acid before and during pregnancy has been shown to reduce the incidence of birth defects.(400μg/day)

Supplement-vitamin E

- Initial research suggested that vitamin E supplements help reduce the risk of chronic diseases, such as cardiovascular disease, cancer, and Alzheimer's, as well as strengthen immunity.
- However, more-recent studies don't substantiate these findings and in fact have found that taking megadoses of vitamin E can be harmful. Because vitamin E is fat-soluable, it also works as a blood thinner, so there may be a risk of hemorrhaging.

Supplement

- Unfortunately, not all people eat a balanced diet based on a variety of foods.
- Recent studies suggest that a somewhat higher intake of vitamins A, C, and E for adults might reduce the risk of developing cancer, atherosclerosis, and depressed levels of high-density lipoprotein (HDL) cholesterol.
- However, several unanswered questions remain, including the amounts needed for effectiveness.

Food labels

- Since 1973, the FDA has required food manufacturers to provide nutritional information (labels) on products
- As of January 1,2006, foodmakers are required by the FDA to put the amount of trans fat on food labels, sparking some companies to start reducing and even eliminating trans fat from its products.
- The FDA has further recommended that food labels list calories in larger type print.

Food labels

Nutrition Facts

Serving Size 1 cup (38 g)
Servings Per Container 18

Amount Per Serving

Calories 100
Calories from Fat 20

	% Daily Value*
Total Fat 2g	3%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 17g	6%
Dietary Fiber 2g	8%
Sugars 3g	
Protein 4g	
Vitamin A	10%
Vitamin C	0%
Calcium	10%
Iron	8%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower, depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

INGREDIENTS: Whole wheat flour, Water, Brown sugar, Wheat gluten, Cracked wheat , Wheat bran, Yeast, Salt, Molasses, Soybean oil, Calcium propionate (preservative), Mono–and diglycerides, Lecithin, Reduced fat milk

Check the serving size and number of servings
➢The nutrition facts label information is based on one serving, but many packages contain more.

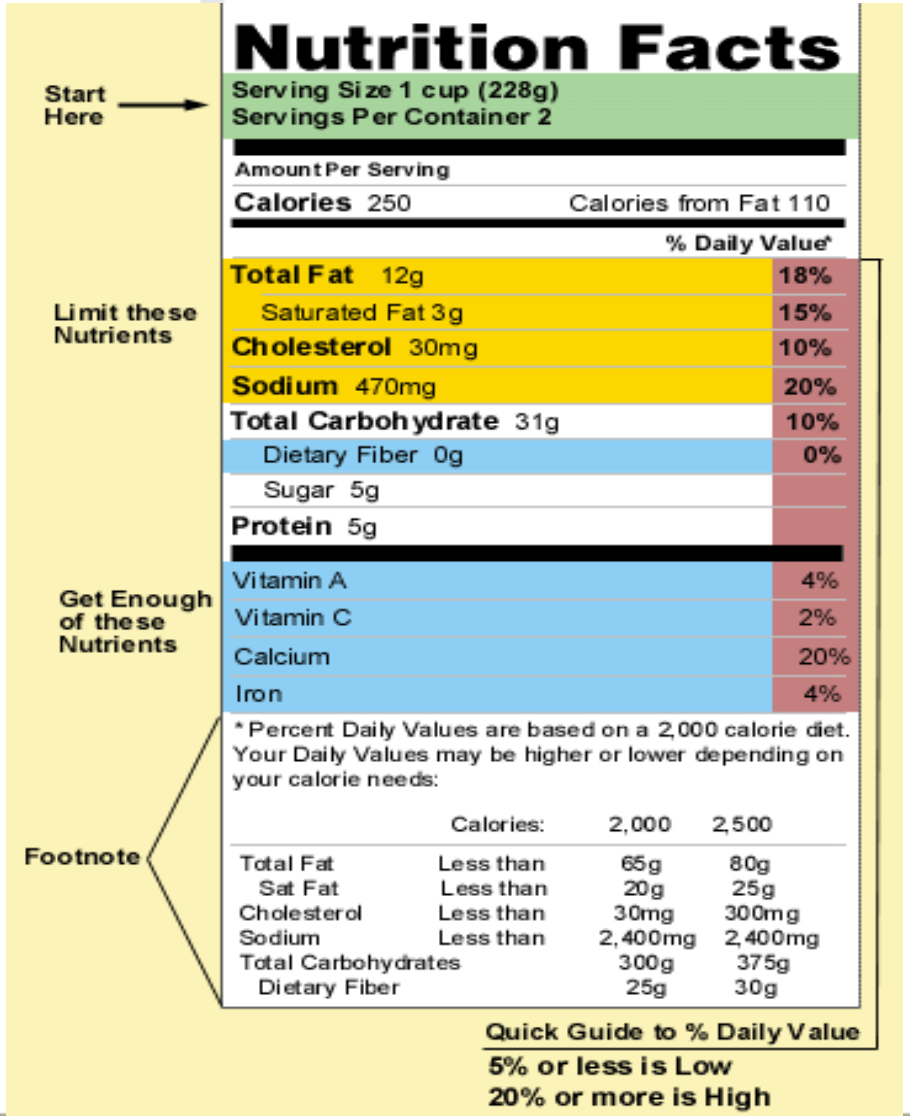
Know your fats and reduce sodium for your health.
➢The % DV for total fat includes all different

Reach for healthy, wholesome carbohydrates.
➢Whole grain foods can't always be identified by

For protein, choose foods that are lower in fat.
➢When choosing a food for its protein content, such as meat, poultry, dry beans, milk and milk products, make choices that are lean, low-fat, or fat-free.

to make a healthier food choice.
➢Limit sodium to help reduce your risk of high blood pressure.

Reading Labels



How many calories would you consume if you eat the whole container?

500 calories

How many grams of total fat?

24 grams of fat

Speaking Label-ese

- Food labels constitute a language all their own, defined by government regulation. You need to learn this language and understand its terms.
- Calorie-free = contains less than 5 calories per serving
- Low-calorie = contains 40 calories or less per serving
- Fat-free = contains less than 0.5g of fat per serving
- Fresh = unprocessed, uncooked, unfrozen

How big are your portions?

Why are portion sizes increasing?

- More people dining out

- Companies using larger sizes as selling points

- Competition among manufacturers

KFC

Checkers
BURGERS • FRIES • COLAS
You don't have to be big to be a big deal.

Why are larger portion sizes a problem?

Bigger portions → **Encourage overeating** → **Increases intake of calories, fat and sodium**

Increases risk for obesity, heart disease, high blood pressure and stroke

Compare the size and calorie difference of coffee…

20 Years Ago

Coffee, 8 ounces
(with whole milk & sugar)

45 calories

Today

Mocha Coffee, 16 ounces
(with steamed whole milk & mocha syrup)

350 calories

★ **305 calorie difference** ★

Compare the size and calorie difference of popcorn…

20 Years Ago

5 cups

270 calories

Today

11 cups

630 calories

★ **360 calorie difference** ★

What does a standard "*portion*" look like?

MyPyramid/Plate gives specific guidelines about types and amounts of food

Recommendations are based on individuals who get less than 30 minutes per day of moderate physical activity, beyond normal daily activities

Fruits

WOMEN	19–30 years old	2 cups
	31–50 years old	1 ½ cups
	51+ years old	1 ½ cups
MEN	19–30 years old	2 cups
	31–50 years old	2 cups
	51+ years old	2 cups

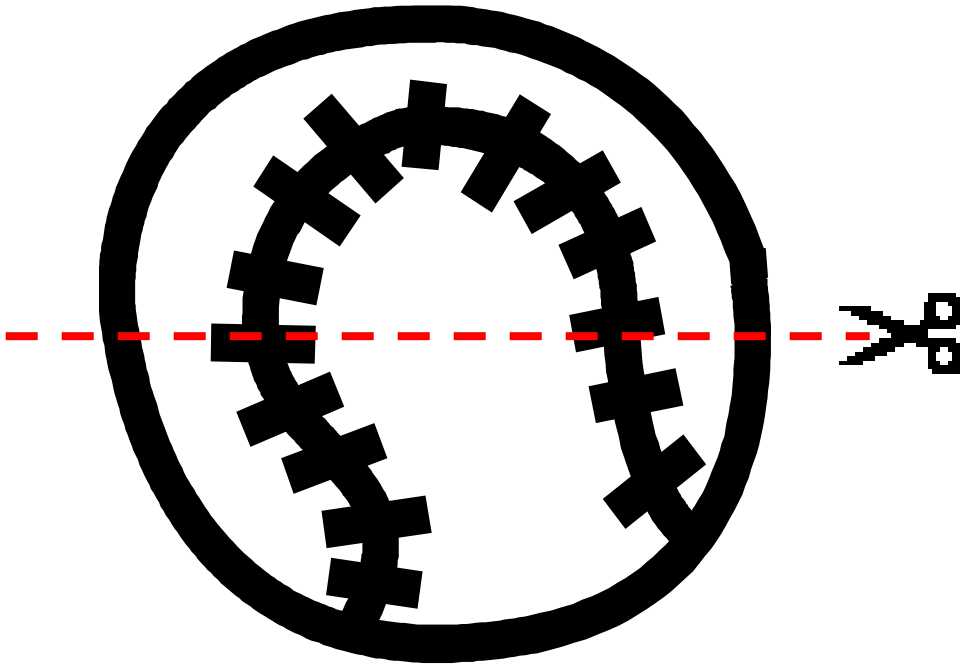
Equivalents to 1 cup:

- **1 cup 100% fruit juice**
- **1 cup of fruit**
- **½ cup dried fruit**

Portion sizes: ½ cup and 1 cup

1 cup ready-to-eat cereal = 1 baseball

½ cup cooked pasta, rice or cereal = ½ baseball



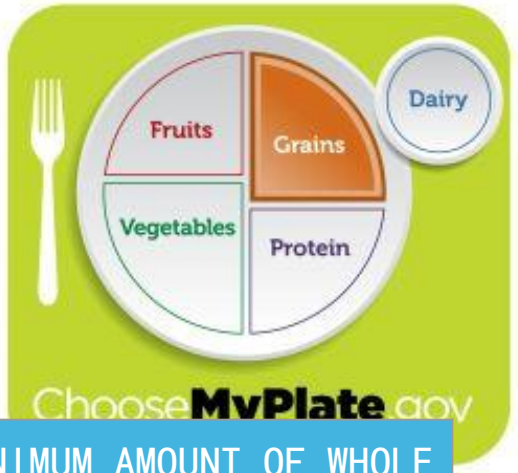
Vegetables

WOMEN	19–30 years old	2 ½ cups
	31–50 years old	2 ½ cups
	51+ years old	2 cups
MEN	19–30 years old	3 cups
	31–50 years old	3 cups
	51+ years old	2 ½ cups

Equivalents to 1 cup:

- **1 cup raw or cooked vegetables**
- **1 cup vegetable juice**
- **2 cups raw leafy greens**
- **1 medium baked potato**

Grains



		DAILY RECOMMENDATION	DAILY MINIMUM AMOUNT OF WHOLE GRAINS
Women	19–30 years old 31–50 years old 51+ years old	6 ounce equivalents 6 ounce equivalents 5 ounce equivalents	3 ounce equivalents 3 ounce equivalents 3 ounce equivalents
Men	19–30 years old 31–50 years old 51+ years old	8 ounce equivalents 7 ounce equivalents 6 ounce equivalents	4 ounce equivalents 3 ½ ounce equivalents 3 ounce equivalents

Equivalents to 1 oz:

- **1 slice bread**
- **½ cup cooked pasta, rice or cereal**
- **1 cup ready-to-eat cereal**
- **1 small 6-inch flour tortilla**
- **3 cups air- popped popcorn**

Which gives the most nutrients for the fewest calories?

2 slices whole wheat bread

1 medium croissant

Protein

Women	19–30 years old 31–50 years old 51+ years old	5 ½ ounce equivalents 5 ounce equivalents 5 ounce equivalents
Men	19–30 years old 31–50 years old 51+ years old	6 ½ ounce equivalents 6 ounce equivalents 5 ½ ounce equivalents

Choose lean meat and poultry. Vary your choices – choose more fish, beans, peas, nuts and seeds.

Equivalents:

- **1 oz. meat, poultry or fish**
- **¼ cup cooked dry beans or peas**
- **1 egg**
- **1 tablespoon peanut butter**
- **½ oz. of nuts or seeds**

Portion sizes: Meat

3 oz. cooked meat, fish, or poultry = a deck of cards

Dairy Group

- Consume 3 cups per day of **fat-free** or **low-fat** milk or equivalent milk products

Equivalents to 1 cup:
- 1 cup (8 oz) milk/soymilk
- 1 cup yogurt
- 1 1/2 oz natural cheese
- 2 oz processed cheese

Effect of fat on calories of one (8 oz) cup of milk

Fat Free **1%** **2%** **Whole**

How many calories could you save by switching to a lower fat milk?

Now how many would you save?

165

100

=

65

Whole

1%

How do those 65 calories add up?

- If you have an extra 65 calories every day, how many pounds could you gain?

65 calories × 365 days in 1 year = 23,725 extra calories per year

1 pound = 3500 calories

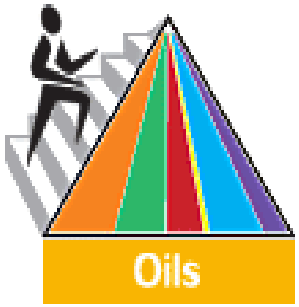
- 23,725 calories per year / 3500 calories per pound =

pounds of weight gain in 1 year

Oils

Women	19-30 years old 31-50 years old 51+ years old	6 teaspoons 5 teaspoons 5 teaspoons
Men	19-30 years old 31-50 years old 51+ years old	7 teaspoons 6 teaspoons 6 teaspoons

- Choose heart healthy oils such as olive, canola, corn and sunflower oil
- Some foods are naturally high in oils, such as nuts, olives, avocados and some fish



Ask yourself:

- **Does this snack add to a healthy diet?**
- **Where does it fit on MyPlate?**

Good snack are:

- Nutritious … part of your overall food plan
- Low in empty calories
- Easy to prepare
- Accessible …. on hand
- Inexpensive

Snacking is a way of life for most of us.

Enjoy fruits & vegetables as snacks daily!

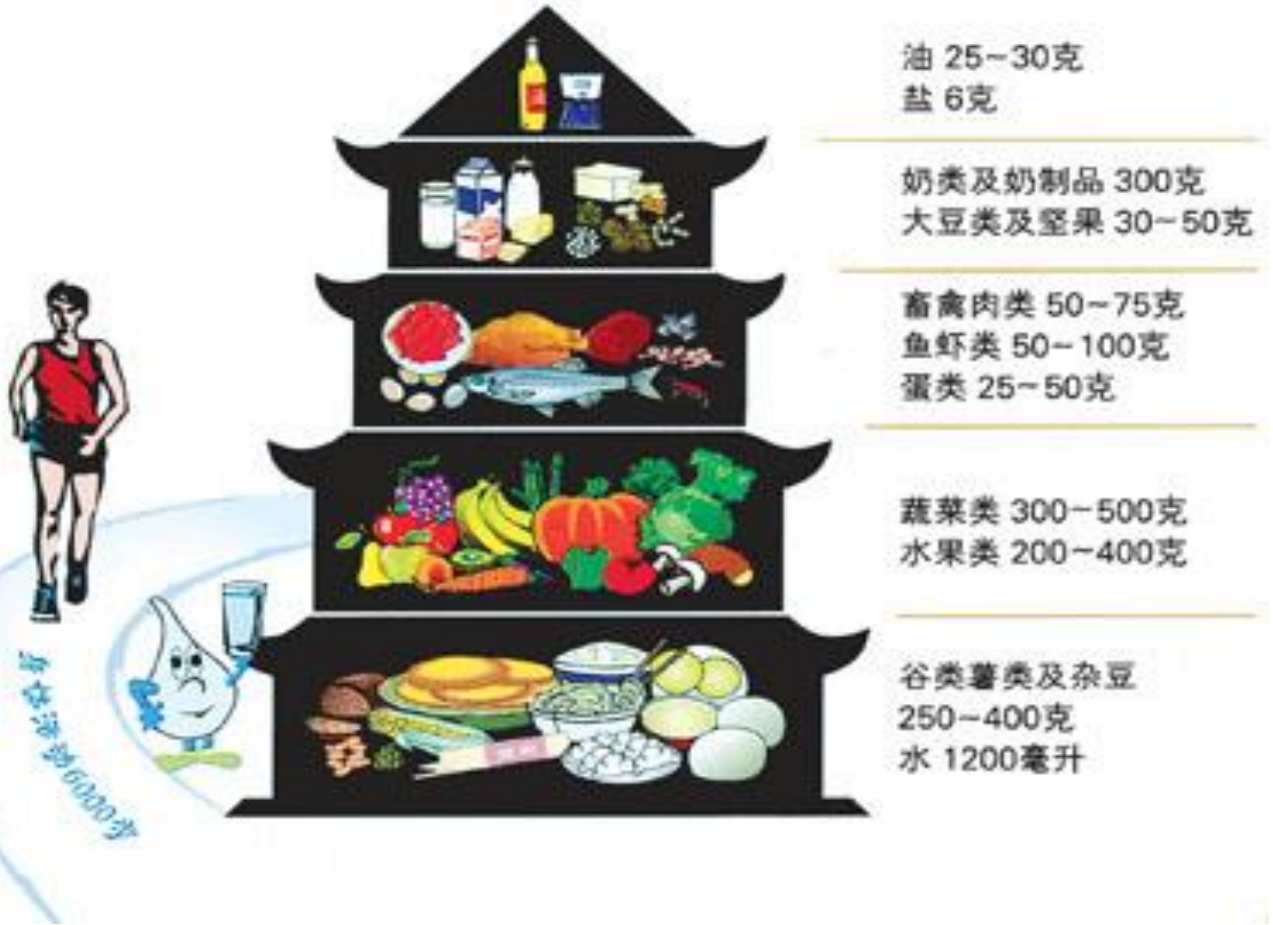
Physical activities

- Children and adolescents ages 6 to 17:
  - 60 minutes or more per day
  - The majority of the 60 minutes should be either vigorous or moderate intensity aerobic activity
  - at least 3 days a week.
- Adults:
  - at least 2 hours and 30 minutes per week
  - divided between moderate and physical levels
  - When adults are active 5 or more hours a week there are greater health benefits.

Ten tips for a Great Plate

- Balance calories
- Enjoy your food, but eat less
- Avoid oversized portions
- Foods to eat often: fruits, vegetables, whole grains and low and fat free dairy and milk products
- Make half your plate vegetables and fruit
- Switch to fat free or low fat milk
- Make half your grains whole grains
- Reduce foods that are high in added sugars, salts and solid fats
- Compare sodium in foods
- Drink water instead of sugar drinks

Chinese Pyramid



Dietary guideline

- Various food, major in cereal
- More vegetables, fruit and potato
- Enough intakes: milk, beans or bean products
- Usual intakes: fish, poultry, egg, lean meat, less intakes: fat and pork fat
- Balance between intakes and physical activity, to keep appropriate body weight
- Less salt food
- Limited alcohol intakes
- Clean and healthy food

Practice

Calculate the recipes

- Food exchange lists

Food exchange lists

- Food exchange lists were introduced by the American Diabetes Association (ADA) and other health organizations.
- A food exchange list
  - Categories: fruits, protein, vegetables, fat, milk, etc.
  - Each category includes appropriate serving sizes for each food
  - One serving of any food in a category is considered ‘equal’ to a serving of any other food in that category

Food exchange lists

- Understandable way to help diabetics control their diets.
- Diets in review recommends that anyone wishing to start a food exchange list consult a dietitian, who can help a person determine the number of servings from each category can help him meet his individual needs and goals.

For diabetic : first step Calculate the standard weight

- standard weight（kg）= (height（cm）－100)*0.9
- (Actual body weight－ standard weight)/ standard weight = %
- >20%—Obesity
- >10%—Overweight
- ±10%—normal
- <-10%—Too light
- <-20%—Thin

Diabetes daily calories supply

Body type	intensity of physical activity			
	in bed	light	moderate	heavy
Thin/Too light	25	35	40	45
Normal	20	30	35	40
Obesity/ Overweight	15	25	30	35

Note: unit ‘kilocalories’

For example

Calculate the total calories

female， diabetic, 43 years old， height: 160cm，

weight: 70 kg, office work, light physical activity

standard weight =

total calories =

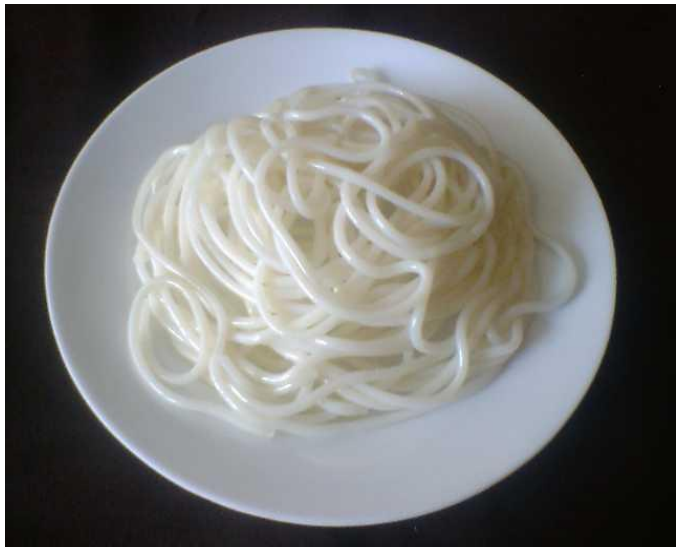
For example

- standard weight = (160-100)*0.9 = 54kg
- （70-54）/54 ≈ 29.6%　obesity
- Light physical activity, obesity, the daily calories (per kg)
  - 25 kilocalories
- Total calories = 54kg×25kcal/kg•d = 1350kcal

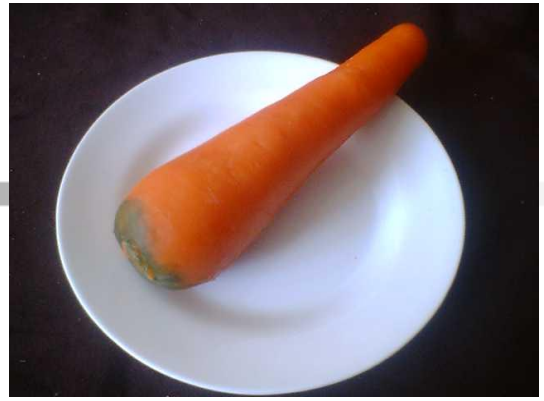
Food exchange

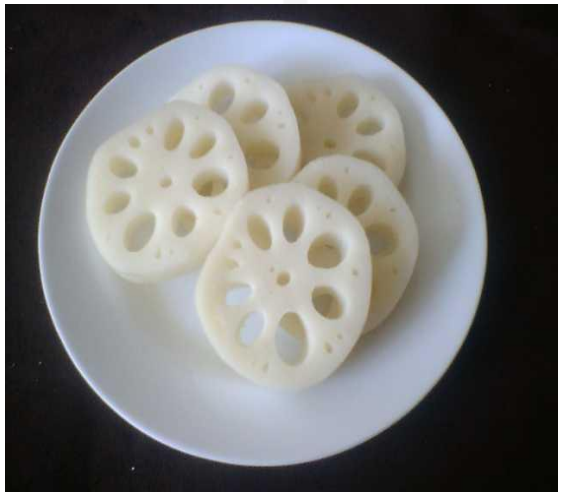
- Food exchange: Produce 90 kilocalories of food is called an exchange。
- Six categories: Grains, vegetables, fruits, meat, milk, fat.
- Kind food exchangeable equivalent, nutritional value is basically the same.
- Features: rough, easy to master, convenient, easily accepted.

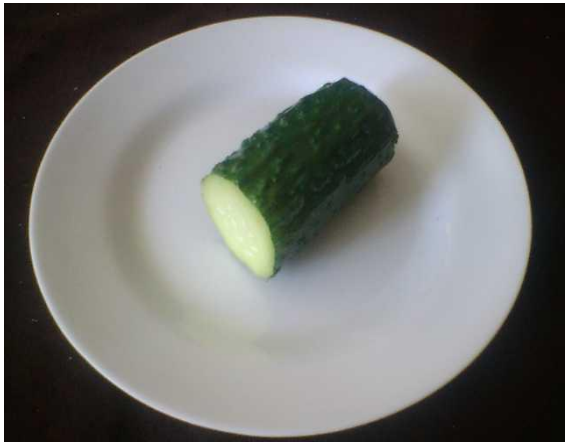
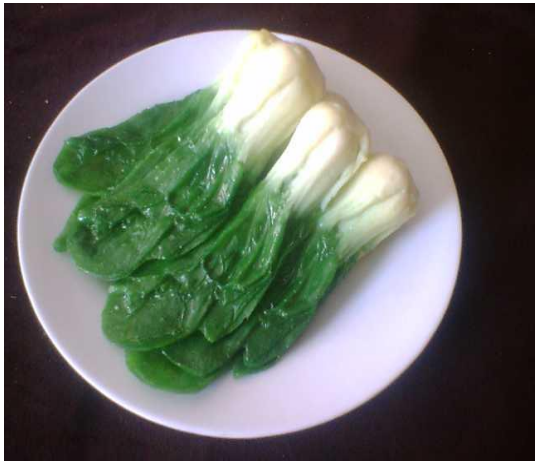
Grain

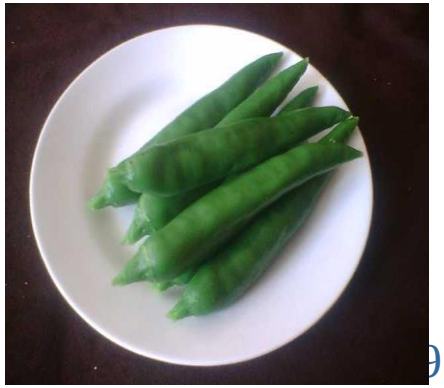


Vegetable

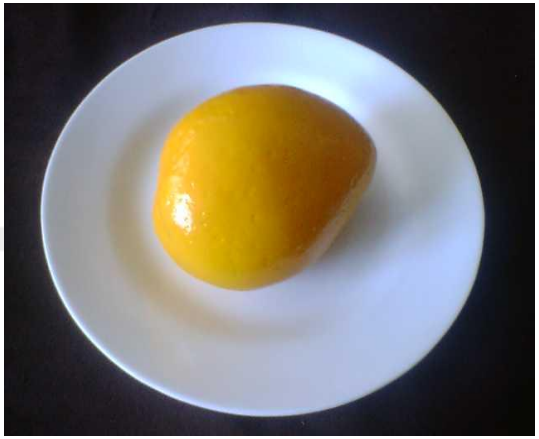


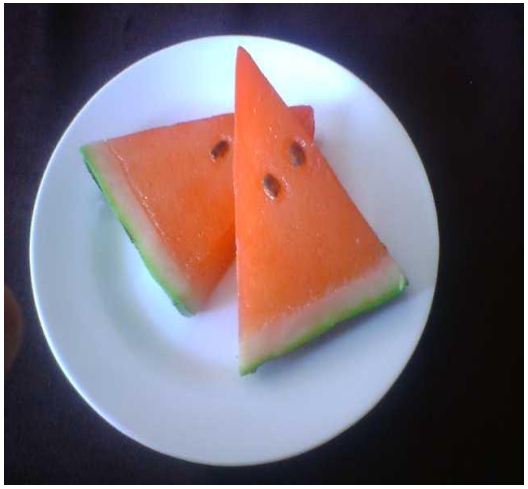


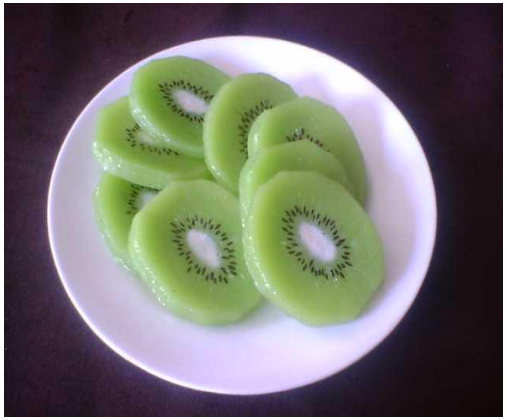



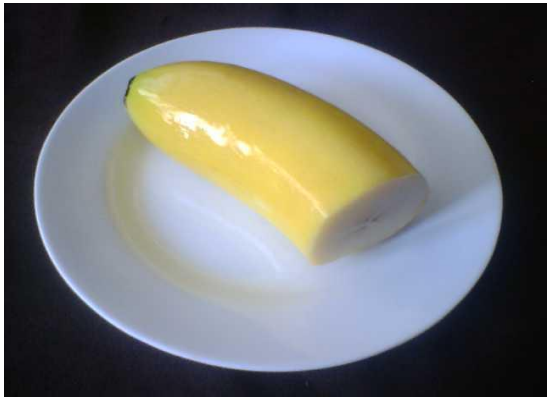


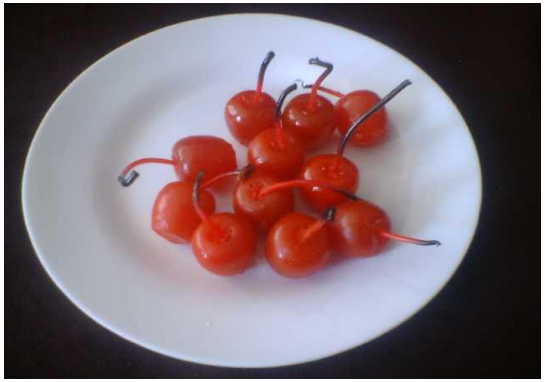
Fruit

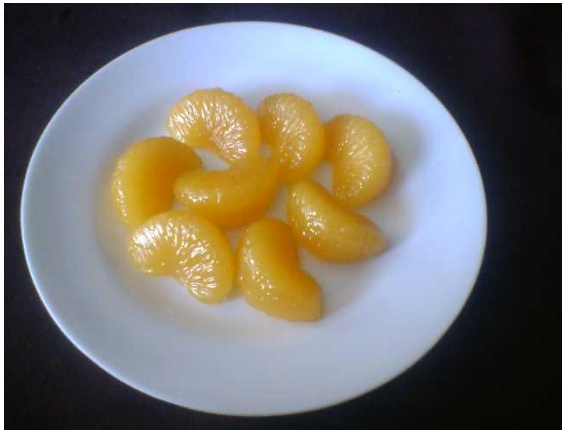




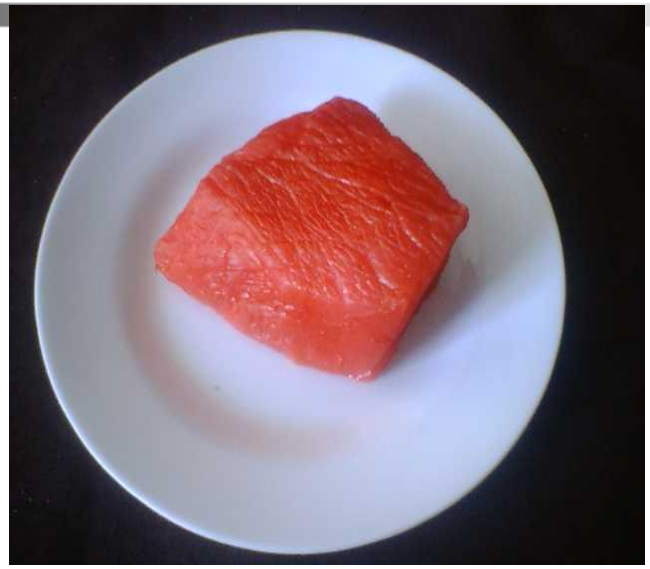








Meat



Milk and Fat

Calculate the recipes

female，diabetic, 43 years，height: 160cm，weight: 70kg, office work, light physical activity

- Total calories = 54kg × 25kcal/kg • d = 1350kcal
- Total copies = 1350 ÷ 90 = 15copies

The allocation of Food exchange copies

Energy (kcal)	Grains (copies)	Fruits (copies)	Meat (copies)	Milk (copies)	Fat (copies)	Vegetables (copies)	Total (copies)
1000	6	1	1	1.5	1.5	1	12
1200	7	1	1	2	2	1	14
1400	9	1	1.5	2	2	1	16.5
1600	10	1	2	2	2.5	1	18.5
1800	11	1	2	3	3	1	21
2000	13	1	2.5	3	3	1	23.5
2200	15	1	2.5	3	3	1	25.5
2400	17	1	3	3	3	1	28
2600	18	1	3.5	3	3.5	1	30
2800	19	1	4	3.5	4	1	32.5

Allocate the three meal

- Time and quantitative：

breakfast	lunch	dinner
1/3	1/3	1/3
1/5	2/5	2/5

- Application of insulin or hypoglycemia:
  - between-meal or bedtime snacks,

    5-10% of total calories
- Meal nutrition should be uniform：

  CHO+PRO+F+FIB

Recipes

time	copies	Recipe content
breakfast	3	Grain 2copies — Steamed bread70g
		Milk 1copy —110ml
lunch	5.5	Grain 2.5copies —rice62.5g
		Meat 1copy — Shredded beef (fried)50g
		Vegetable 0.5copy — Celery (fried)250g
		Fat 1.5copies — Vegetable oil15g
dinner	5.5	Grain 2.5copies — corn200g
		rice37.5g
		Meat 1copy — chicken75g
		Vegetable 0.5copy —cabbage (stew)250g
		Fat 1.5copies — oil 15g
snake	1	Fruit 1copy — apple200g


Thank You