

Editorial

Hong Kong is a food paradise where we can taste a wide variety of foods. We may have concern about one thing: how can we eat healthy and have good nutrition? Well, the essence is to eat the appropriate amount of food and in a balanced manner, so that we could get adequate calories and nutrition to supply the body's need for growth and daily activities. Calorie is the unit for measurement of energy. The knowledge about calorie helps us adopt a balanced diet.


We often make comparison between the intake and the consumption of calorie. The reason is that if the energy intake from food equals to the energy consumed, there would not be excessive intake. We then can meet the need of our daily life as well as keep our body weight within a desirable range. However, if there is insufficient energy, body growth would be adversely affected. So, how can we apply the concept of "calorie" in daily life?

For intake of calorie, the amount would vary with different kinds of food we eat. For consumption, different people would have different energy consumption depending on their age, sex, body weight, daily activity and health status. What we should do is to make a balance between the intake and consumption of energy, in order to lead a healthy living.



In this issue of bridge, our dietitians give us details about calorie and the principles in its application. Hope that it would help us make wise choices, eat happily and stay healthy. You may find more details about healthy eating in the following websites of the Centre for Food Safety and the Student Health Service.

- 1 http://www.studenthealth.gov.hk/english/health/health_dn/health_dn.html
- 2 <http://www.cfs.gov.hk/english/nutrient/index.shtml>



eat healthy
and have good
nutrition

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Calorie and its use

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Introduction

People often say, ".....losing weight means cutting down calorie, count before you eat....." In fact, whether we need body weight control or not, we should know about "calorie" and learn how to use it. Appropriate amount of calorie intake, together with balanced nutrition, would help promote our health, increase immunity and supply adequate energy for daily activities.

Definition of calorie

Calorie is the unit for measuring energy. There is energy in all foods and drinks (except water). One calorie is defined as the amount of energy needed to heat up one gram of water by one degree Celsius. We may come across various units for quantifying energy such as calorie, Calorie, kilocalorie, Kcal, Joule, kilojoule in publications and on food packages. What do they mean?

"Calorie" (abbreviation is "Cal") with the capital C does not equal to "calorie" (abbreviation is "cal") even though their pronunciation is the same. One "Calorie" is equivalent to 1000 "calorie". We can use "kilo" (abbreviation is k) to express the meaning of 1000. Therefore, 1 Calorie means 1 kcal. When we talk about calorie in our daily life, we actually mean 1 Calorie or 1 kcal.

$$1 \text{ Calorie (1Cal)} = 1000 \text{ calorie (1000 cal)} = 1 \text{ kilocalorie} = 1 \text{ kcal}$$

"Joule" (abbreviation is J) is another unit for measuring energy. It is widely used in some countries. One kcal is equivalent to around 4.184 kJ.

$$1 \text{ kilocalorie (kcal)} = 4.184 \text{ kilojoule (kJ)}$$

How much energy does food contain?

Foods contain energy. The amount of calorie in individual food depends on its composition, namely, carbohydrates, protein, fats and alcohol

1g Carbohydrates	≈	4 kcal (Calorie)
1g Protein	≈	4 kcal (Calorie)
1g Fat	≈	9 kcal (Calorie)
1g Alcohol	≈	7 kcal (Calorie)

In comparison to carbohydrates, protein and alcohol, fats are the most energy-dense component found in food, with around 9 kcal in every gram of fat. Foods that are high in fat such as deep-fried foods are higher in calorie. For example, the calorie content of vermicelli (rice noodles), which has not been deep-fried before packaging, is lower than instant noodles, which has been deep-fried. Duck with skin removed, has lower energy content than duck with skin by about two-third. The energy of skim milk is lower than full-fat milk by almost half.

Food	Weight	Energy (kcal)
Instant noodles	100 g	472
Rice noodles (cooked)	100 g	109
Duck (with skin)	100 g	404
Duck (without skin)	100 g	132
Full fat milk	240 ml (1 cup)	154
Skimmed milk	240 ml (1 cup)	84

If you are interested in the calorie of other food items, you may browse the following website:
http://www.studenthealth.gov.hk/english/health/health_dn/health_dn_cvocf.html

How much energy do we need every day?

Food supplies the energy necessary for carrying out our daily activities, for example, going to school, doing exercise, growth, breathing and digesting food. Basically, energy expenditure can be divided into 3 types:

1) Basal metabolic rate (BMR). It is the minimum amount of energy expended for sustaining life processes such as heartbeat, breathing, blood circulation.

2) Activity-related energy expenditure (AEE). It is the energy needed for physical activities, for example, walking, football, doing household chores, doing homework.

3) Thermic effect of food (TEF). It is the energy required for digestion, absorption, and metabolism of nutrients.

For adults, if the energy obtained from food equals to the energy expended, the body weight would remain unchanged. If the energy obtained is less than the energy expended, the body weight may decrease. Conversely, if the energy intake is higher than the energy expended, one would become overweight and possibly obese. For children and teenagers, extra amount of energy is needed for growth and development. Therefore, it is very important that they obtain adequate energy for growth and different kinds of activity in daily living.

How much calorie is enough? Different countries have their own reference values to estimate how much energy a person requires per day. Here are two examples of reference values for the average daily energy requirement.

United States- Reference value of average daily energy requirements for individuals (kcal)

Age	Weight(kg)		*PAL (low)		*PAL (Moderate)		*PAL (High)	
	Male	Female	Male	Female	Male	Female	Male	Female
6-7	21.7	20.6	1350	1225	1575	1425	1800	1650
7-8	24.0	23.3	1450	1325	1700	1550	1950	1775
8-9	26.7	26.6	1550	1450	1825	1700	2100	1950
9-10	29.7	30.5	1675	1575	1975	1850	2275	2125
10-11	33.3	34.7	1825	1700	2150	2000	2475	2300
11-12	37.5	39.2	2000	1825	2350	2150	2700	2475
12-13	42.3	43.8	2175	1925	2550	2275	2925	2625
13-14	47.8	48.3	2350	2025	2775	2375	3175	2725
14-15	53.8	52.1	2550	2075	3000	2450	3450	2825
15-16	59.5	55.0	2700	2125	3175	2500	3650	2875
16-17	64.4	56.4	2825	2125	3325	2500	3825	2875
17-18	67.8	56.7	2900	2125	3400	2500	3925	2875

*PAL = physical activity level

China-Reference value of average daily energy requirements for individuals (kcal)

	Male			Female		
Aged 7-10	1950			1850		
Aged 11-14	2650			2300		
Aged 15-18	2900			2400		
Activity Level	Low	Medium	High	Low	Medium	High
Aged 18 above	2400	2700	3200	2100	2300	2700
Aged 50 above	2300	2600	3100	1900	2000	2200
Aged 60 above	1900	2200	/	1800	2000	/
Aged 70 above	1900	2100	/	1700	1900	/
Aged 80 above	/	1900	/	/	1700	/

Female: Pregnancy +200 kcal, Breastfeeding +500 kcal

From the above tables, we note that daily energy needs vary among individuals. Children and adolescents in their developmental stages, pregnant women and breastfeeding women require higher calorie intake. Energy needs decline gradually with age (after the age of 18). People with higher physical activity level need more energy. Therefore, we may find out our daily energy requirement from the above tables according to our age, sex, body weight, activity level, etc. However, the values do not indicate the exact energy requirement and the figures are for reference only.

How do we apply "calorie" in our daily life?

The use of calorie is widespread.

1) In clinical settings, energy requirement is usually estimated by medical personnel or dietitians to help plan diets for patients with special need, for example, diabetes, on enteral/ parental nutritional support, etc.

2) According to the World Health Organization's (WHO) recommendation, about 55% - 75% of our total energy should come from carbohydrates, about 10 - 15% from protein and about 15 - 20% from fats. For example, for an individual who has an energy requirement of 2000 kcal per day; about 1100 - 1500 kcal should come from carbohydrates, about 200 - 300 kcal from protein and about 300 - 600 kcal from fats. It would be good if we can obtain the energy from food in this ratio. However, we also need to follow the principles of a balanced diet in order to achieve a really healthy eating lifestyle.

The principles of a balanced diet are as follows:

Eat most – grains or cereals

Eat more – vegetables and fruits

Eat moderately – meat, poultry, fish, eggs, dry beans and dairy products

Eat less – food high in fat/oil, salts or sugar

Drink 6-8 glasses of fluid (including water, tea and soup) every day

Please check the following website for more details about balanced diet:

http://www.studenthealth.gov.hk/english/resources/resources_bl/files/lf_dn_cpeh.pdf

3) For individuals who are trying to manage their weight, they tend to have high concern about the calorie content in foods. One of the major reasons of overweight is energy intake being greater than energy expenditure. The excessive energy would accumulate and store in our body as fat. Knowing more about calorie content of different kinds of food can help us choose the more appropriate kind of food to eat, thus help in weight control. For example, 100g butter contains 717kcal, 100g peanut butter contains 588kcal and 100g jam contains 255kcal. Undoubtedly, jam's calorie is the lowest among the three. Another example, 100g pork (50% lean) contains 395kcal and 100g pork (100% lean) contains just 143kcal. 100% lean pork obviously contains much lower calorie. It is understandable that the advice from dietitians usually concerns about the controlling of calorie intake. But, is weight management only concern about calorie counting? Let's look at the following diets.

Diet A

	Food	Portion	Calorie (kcal)
Breakfast	Instant Noodles	1portion (~100g)	472
	Soft Drinks	1cup(~240ml)	97
Lunch	Instant Noodles	1portion(~100g)	472
	Soft Drinks	1cup(~240ml)	97
Afternoon snacks	Crisps	1 packet (~50g)	268
Dinner	Instant Noodles	1 portion(~100g)	472
	Soft Drinks	1cup(~240ml)	97
Total energy			1975

Diet B

	Food	Portion	Calorie (kcal)
Breakfast	Wholemeal bread	2 slices(~100g)	246
	Egg (boiled)	1 (~50g)	78
	Skimmed milk	1 glass (~240ml)	84
	water	1 glass (~240ml)	0
Lunch	Brown Rice	1 1/2 bowl(~279g)	327
	Spinach	2/3bowl (~160g)	24
	Lean meat	~100 g	143
	water	1 glass(~240ml)	0
Afternoon snacks	Apple	1 (~138 g)	81
	Skimmed milk	1 glass(~240ml)	84
	Plain crackers	8 (~24g)	104
	water	1 glass(~240ml)	0
Dinner	Brown Rice	1 1/2 bowl (~279g)	327
	Broccoli	2/3bowl (~160g)	35
	Lean chicken	~80g	111
	Orange	1 (~121g)	59
	water	1 glass(~240ml)	0
Total oil		6 teaspoons(~30g)	270
Total energy			1973

Diet A and Diet B has similar amount of calorie. Nevertheless, the nutritional value could be very different. Diet B is a well-balanced diet and thus, a healthier choice. Consuming Diet A over a period of time may put one at a higher risk of the following:

- 1) Excessive intake of fat and sodium (salt) may increase the risk of cardiovascular diseases and high blood pressure.
- 2) Excessive intake of simple sugar may increase the risk of dental caries.
- 3) Inadequate intake of vitamins and minerals is likely to affect our general health and may compromise our immune system in the long run.
- 4) Inadequate dietary fibers and water intake could cause constipation.
- 5) Inadequate protein intake means that our body may not be able to repair our skin and muscle.
- 6) Inadequate calcium intake may increase risk of osteoporosis.

On the contrary, Diet B is a healthy and well-balanced diet, with 2 portions of fruits and 3 portions of vegetables every day, and following the principles of the healthy eating. By adopting a healthy diet, the risks of developing chronic illnesses are lowered and our health and general well-being maintained. Therefore, both energy and nutrients are important in weight control. Either inadequate energy intake or nutrient deficiency would adversely affect our health. Needless to say, appropriate amount of exercise is also essential.

How do we use nutrition label to choose food?

The law upgrading food labels will become effective on 1 July 2010. It is a mandatory nutrition-labeling scheme for all pre-packaged food (exclude the exempted foods). The law requires all pre-packaged food to label energy content plus seven core nutrients - protein, carbohydrates, total fat, saturated fat, trans

fat, sodium and sugars. Having this information, we can compare different pre-packaged food and choose the healthier options according to our needs.

For individuals who need weight control, they should try to choose foods that are low in total energy, fats, and sugars. With the help of nutrition label, it would be feasible to choose food which is "low energy", "low sugar" or "low salt". According to the food labeling law, the meanings of these nutrition claims are as follow.

Claim	Food (per 100g) containing	Liquid (per 100ml) containing
Low calorie	≤ 40 kcal	≤ 20 kcal
Energy free	Not applicable	≤ 4 kcal
Low fat	≤ 3g fat	≤ 1.5g fat
Fat free	≤ 0.5g fat	≤ 0.5g fat
Low sugar	≤ 5g sugar	≤ 5g sugar
Sugar free	≤ 0.5g sugar	≤ 0.5g sugar

We should always compare the nutrient value as well as the calorie content on nutrition labels when we buy pre-packaged food, choose the healthier option and follow the principles of healthy eating. The following website may give more information on calorie and nutrient values of different kinds of food: <http://www.cfs.gov.hk/english/nutrient/search1.shtml>

Conclusion

"Calorie" is a kind of basic nutrition knowledge which helps us choose food. With the help of calorie, we can calculate the amount of calorie intake and calorie consumption. However, we should bear in mind that our aim is to have balanced diet and healthy lifestyle. Besides energy, nutrition is also important in our choice. We should not lose weight or cut down our energy intake too casually. After all, the key to maintaining or promoting our health is to obtain adequate energy and nutrients. For people with special needs such as overweight, underweight, nutrition deficiency, illness, etc., they should seek advice from doctors or dietitians on how to adjust their energy and nutrient intake according to their individual need.

Nutrition Facts	Per 100ml
Calories	62 kcal
Fat	3.5g
Saturated fat	2.0g
Trans fat	0.0g
Carbohydrates	4.6g
Sugars	0.5g
Protein	3.1g
Calcium	170mg
Sodium	40mg



Reference:

The Chinese Dietary Reference Intake, Chinese Nutrition Society 2000
 Human Energy Requirements 2004, WHO/FAO
 WHO/FAO2003
 Centre for food safety

Pennington, J.A.T. Bowes and Church's Food Values of Portions Commonly Used. 17th edition. US: Lippincott Williams & Wilkins, 1998.

It is very important that we get adequate energy for growth and daily activities. However, if energy intake is greater than energy consumption, the excessive energy would become fat deposit in the body and accumulation of fat would lead to overweight. Therefore, a balanced diet is the key. Appropriate amount of nutrition and calorie would provide sufficient input for the body and would not bring about overweight. Let's look at our students' views towards calorie and healthy eating.



Calorie is a measure of energy

A balanced diet is very important

Take food that is low-sugar and low-fat. Have more physical exercise

We have to keep our weight in the desirable range

Eat less food or snacks that are rich in calorie content

3 parts of cereals, 2 parts of vegetables and 1 part of meat

Fruits are healthy snack food because they are nutritious and low in caloric value

Both you and me would like to become a healthy person, let's eat more cereals but less sugar

The caloric value of dessert and deep-fried food is very high

Eat less deep-fried or fried food, do more physical exercise. The energy intake would not become excessive

Choose food carefully, check the caloric value before you buy food

Eat less candies, pop-corns, soft-drinks and ice lolly



The calorie content in one pack of chocolate (100g) is approximately 586 Cal. The calorie content in one bowl of rice (100g) is approximately 236 Cal. Answer: a. 2.5 bowl.

Dear brothers and sisters of Newsletter,

What kind of food do you like? For myself, I like potatoes, Chinese white cabbage, ice-cream, ice-lolly, chestnuts, chestnut-cakes, mangoes, mango-cakes, cheese cakes, potato chips etc. Are they good for us?

Ying Ying



Dear Ying Ying,

Thank you for your letter. I love to eat a wide variety of foods. Usually I choose healthy ones and take the appropriate amount suggested by the “Healthy Food Pyramid”. Among the types of foods mentioned in your letter, I suggest you take more vegetables and fruits. Cakes are rich in sugar, and potato chips are high in fat. Hence, it would be better for you to reduce taking these kinds of foods, so as to prevent too much calorie intake, and not to affect the absorption of other nutrients.

A balanced diet is very important to the physical development of children and adolescents. To achieve this, we must take the types and amounts of food recommended by the “Healthy Food Pyramid”. Cereal should form the bulk of our diet, accompanied by a relatively large amount of vegetables and fruits. A suitable amount of meat, eggs, beans and dairy products is also important. Intake of salt, oil and sugar should be reduced to a minimum. This is what a balanced diet looks like.



Wish you good health.

Health Box

Interesting knowledge Q&A

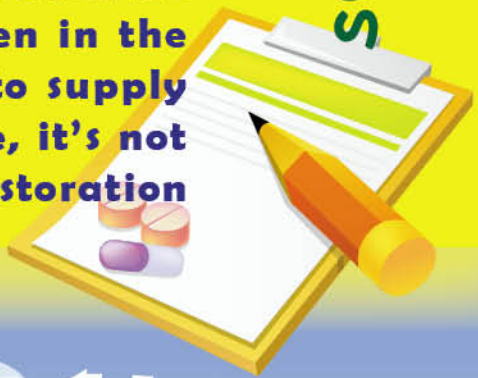
Q: How many bowls (medium size) of rice would provide the same amount of calorie intake as a chocolate bar (~100gm) would do?

A:
a. 2 1/2 bowl
b. 1 1/2 bowl
c. 1 bowl
d. 1/2 bowl
(Answer: find it out from the newsletter)

Health Drink

It has been claimed that some drinks contain glucose which could quickly restore the energy you consumed. In fact, many foods, such as rice, bread, cereals and sugar would be digested to glucose. Besides, glycogen in the liver would be converted to glucose to supply energy as body needs arise. Therefore, it's not a must to eat or drink "glucose" for restoration of energy.

Health Tips



For enquiries of student's health problem, please write to "Health Box"

Please write your name & address, contact tel. no. in the letter.

Health Box
4/F, Lam Tin Polyclinic,
99 Kai Tin Road,
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