5 \textbf{Diet and Meal Planning}

Food Science and Technology Strand
## 5 Diet and Meal Planning

### 5.1 Factors to be considered in meal planning

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1.1 Target Groups</td>
<td>3</td>
</tr>
<tr>
<td>5.1.2 Climate factors</td>
<td>5</td>
</tr>
</tbody>
</table>

### 5.2 Planning meals

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2.1 Planning meals for different age groups</td>
<td>6</td>
</tr>
<tr>
<td>5.2.2 Planning meals for people with special</td>
<td>9</td>
</tr>
<tr>
<td>dietary needs</td>
<td></td>
</tr>
<tr>
<td>5.2.3 Planning meals for special occasions</td>
<td>13</td>
</tr>
</tbody>
</table>

### 5.3 Principles of Meal Planning

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.3.1 Lifestyle and family living</td>
<td>15</td>
</tr>
<tr>
<td>5.3.2 Financial and resource constraints</td>
<td>15</td>
</tr>
</tbody>
</table>
Diet and Meal Planning

A nutritious and wholesome balanced diet is a key to good health. A well-balanced diet includes eating the right amount of foods from the five main food groups. Most people will have three main meals a day. No single food contains all nutrients the body needs so it is important to eat a wide variety. The right amount of different nutrients can increase life expectancy by keeping the heart and body healthy, and preventing many long-term illnesses. Body weight can be kept to an acceptable level through healthy eating, leading to a fitter and more active lifestyle.

Nutrition is one of the factors that contributes to the wellness of an individual. A balanced diet, when planned carefully, provides adequate energy and nutrients for growth, health maintenance, disease prevention and therefore it is essential for our whole lifespan. There is a number of factors to be considered when planning meals.

5.1 Factors to be considered in meal planning
5.1.1 Target Groups

Energy requirements of people vary depending on sex, age and activity level.

(A) Sex

The calorific requirement is generally higher in men than in women because men have larger body size, and they are more physically active and have more lean muscle mass.

(B) Age groups

(i) Infants

Children under 1 year of age is referred as infants. Growth in the first year of life is more rapid than at any other time in the life cycle and adequate amount of energy and nutrients are required to support rapid growth and development and prevent nutritional inadequacies. A baby doubles its birth weight by 6 months of age and triples it within the first year of life. The energy, vitamin, mineral, protein and water requirements are higher per unit of body weight than any other age. Infants need all the vitamins and minerals that other humans need but in different amounts.

(ii) Children

❖ They grow at a slower rate than infants, however, their nutrient needs do not diminish. They need energy from food for daily physical activities and nutrients to promote growth and health. Appetite of children at this age is small and varied. Three main meals with nutritious snacks are needed in between to supply enough energy to meet their high activity level but small appetite.

❖ Childhood obesity is common nowadays in Hong Kong. Obesity in children increases future risk of chronic disease such as high blood pressure, heart disease and may have social stigma. A balanced diet together with regular physical activity is necessary to prevent excessive weight gain. Regular exercise, healthy snacks and portion control are effective methods to maintain the healthy weight of children. Children should not be put on ‘diet’ as they are growing and the weight should be maintained during this growth period.

(iii) Adolescents

❖ It is a period of rapid growth with great bodily changes. Bones grow and gain in density; muscle and fat tissues develop; and blood volume increases. Sexual maturity occurs when boys’ voices change and girls experience the onset of menstruation. They have enormous appetite compared with children. Calorific requirements increase because of rapid growth.
❖ It is a period of growing independence and they become influenced by their peers and media. Eating habits can be affected by schedule of study, extracurricular activities, part-time jobs, social activities, the availability of nutritious food, and the lack of nutritional knowledge. Teachers, care-takers or parents could encourage healthy eating and healthy lifestyle tactfully by informing the adolescents of the nutritional needs, the appropriate choices of food and also by providing them with nutritious food/snacks at school/home.

❖ Sexual maturity and physical changes during puberty could be stressful to some adolescents. The over concern on weight and body image may predispose a teenager to use unhealthy methods to control their weight. They may skip meals, choose very low energy diets, laxatives, diet drugs or purging. This can lead to serious health problems, nutrient deficiencies and eating disorders in later life.

(iv) Adults

❖ Growth is usually completed by the age of 25. The aims of nutrition during adult years are to obtain adequate energy and nutrients to maintain a healthy body weight and prevention of chronic diseases through appropriate food choices.

❖ Adulthood is a period when an individual begins to experience and cope with numerous changes in the realms of work, family and education. Healthy eating and lifestyle are important for them to cope with stress and maintain health.

❖ The calorific requirement begins to decrease after the age of 25 as basal metabolic rates decrease. People during adult years may not get as much exercise as they did in earlier years. Thus, when appetite and food intake do not decrease, there is a common tendency toward weight gain during this period. An intake of 3,500 calories more than the body needs for maintenance and activities will result in a weight gain of 500 grams of fat. A person who overeats by only 120 calories a day (equal to a can of soft drink) can gain 6 kilograms in 1 year. Therefore, it is important to reach energy balance to maintain a healthy weight (i.e. energy intake equals energy output). This can be achieved by eating less energy-dense foods, and increasing physical activities as exercise will increase the number of calories burned. Healthy eating and lifestyle are encouraged during adult years to maintain health and prevention of chronic diseases.

(v) Elderly

❖ Physiological, psychosocial and economic changes of the elderly affect their nutrition status. The body’s function changes with age. Metabolic rate slows down, bones become less dense and lean muscle mass is reduced. Eye-sight,
hearing, taste and smell are less acute and poor dentition is common. The secretion of digestive enzymes and hydrochloric acid is diminished which in turn impairs digestion and absorption of nutrients such as vitamin B12. The reduced muscle tone of the intestine may result in constipation in an elderly.

❖ The loss of spouse or close friends, physical disabilities, poor health, feeling of loneliness and uselessness may diminish an elderly’s ability to shop, cook and also his/her appetite to eat.

❖ Retirement of the elderly results in decreased income and this may affect one’s choice of food. Some may choose foods by cost rather than nutrient content.

❖ As a result of reduced metabolic rate and physical activity, the calorific requirement of an elderly decreases. However, their nutritional needs are quite similar as in adult years. The need for iron decrease after menopause. Some nutrient requirements such as vitamin D and calcium increase in elderly.

(C) Occupation

Occupational activity of an adult affects energy and nutrient requirements and this should be noted when planning meals.

(D) Health Concerns and Special Dietary Needs

Some people have special dietary needs and precautions that need to be taken in meal planning regarding the types of food to be taken or avoided.

5.1.2 Climate factors

(A) We need energy to maintain our body temperature. The climate will affect our energy output. In winter, we need more energy to keep us warm than in summer. An increase in food intake increases the metabolic rate, which helps generate heat and fat stores, that provide insulation to reduce heat loss. In hot weather, increase fluid intake is important to compensate loss of water and electrolyte through sweating. Light meals such as sushi, salad, sandwich and juice can be served in hot weather while hot dishes and drinks should be served in cold weather to keep the body warm.

(B) Time of the year is another factor to be considered during meal planning. Some foods are only available in particular seasons e.g. lychee, mangosteen, longan and durian are summer fruits while green sprouts, sweet yam, watercress are winter vegetables. Foods in season are fresh and relatively cheaper to buy, and they are at their best in terms of the taste and nutritional value.
5.2 Planning meals

5.2.1 Planning meals for different age groups

(A) Infants

(i) Infant formula or breast milk provides an infant with the proper balance of nutrients required before the introduction of solid food (4-6 months). Breast milk is the best food for infants, it provides all the nutrients an infant needs for the first 4-6 months. It contains enzymes, hormones, antibodies, immune cells that aid digestion and protect infants from infections and viruses. It also contains essential fats (arachidonic and docosahexaenoic fatty acids) that are required for eye and brain development. Infant formula is designed to resemble breast milk and provide comparable nutritional benefits except they lack the unique nutrient, enzyme and hormone content. The amount of formula/breast milk and frequency of feeding depends on the infant’s age and individual needs.

(ii) Introduction of solid foods before the age of 4-6 months is not recommended due to immaturity of gastrointestinal tract and kidneys to handle solid food. After that, solid foods could be introduced gradually and individually. The typical order of introduction begins with cereal, usually iron-fortified ones, vegetables, fruits, eggs and then meat. A waiting period of 4-5 days before the introduction of another new food is recommended to make sure no allergic reaction or intolerance.

(B) Children

(i) Children should have a varied and balanced diet with foods from the 5 food groups (grains, fruits & vegetables, meats, dairy products, fats & sweets). Main energy source should come from carbohydrates, such as cereal, bread, rice and pasta, and moderate amount of energy should come from fat and protein. Protein is needed for the formation of bone tissue and lean body mass. Vitamin A is for normal development of vision and skin and main food sources are milk, offal, egg yolk and yellow and orange vegetables. Adequate iron intake is important for growth, cognitive function and the immune system. Iron rich foods include red meat, liver, green leafy vegetables, dried fruits and nuts. Vitamin C rich foods e.g. fruits, help to enhance the absorption of iron. Lack of calcium in childhood can result in poor bone density and increase risk of developing osteoporosis in later life. The consumption of sugary or fatty snack foods and drinks such as crisps, sweets, chocolates, soft drinks should be minimised and replaced by more nutrients-dense food, in order to prevent excessive calorific intake and reduce risk of dental caries. Milk and water are the best drinks to serve between meals. Adequate dietary fibre (fruits, vegetables and whole-grains) and water are needed to prevent constipation in children.
(ii) Toddlers and children learn by imitation and their attention tend to focus more on their environment rather than their stomachs. Parents exert great influence on the eating behaviour of their children and can set a good model for them. They can provide a variety of attractive and nutritious food in a pleasant setting to spark the interest of children in eating, e.g. add garnishes or decorations, or serve with fancy tableware. Food should be served in small portions and cut into smaller pieces for easy chewing.

(C) Adolescents

(i) Meal planning for adolescents should be based on the food pyramid, including larger portions of energy from carbohydrates, such as rice and bread. Protein-rich foods, such as lean meat, fish and dairy products are important for body tissue building. Foods that are rich in iron and calcium are essential for the growth of healthy blood, bone and teeth. The need for iron in girls is greater than boys because of losing blood during menstruation. Snacks could be a complement to main meals for adolescents to obtain sufficient energy and nutrients but not as a replacement for main meals. Healthy snack choices include low fat dairy products, dried or fresh fruits, wholemeal biscuits, unsweetened soy bean milk.

(ii) Fast food is popular among adolescents and they are high in fat, sodium and calories while containing limited amounts of vitamins, minerals and fibre. Excessive consumption of fast food and unhealthy snacks can lead to an increase in fat, sodium and calorific intake. This increases the chances of developing obesity and chronic disease in the adult years. Eating too much of these foods may affect the appetite of main meals and can lead to a deficiency of essential nutrients.

(D) Adults

(i) Meal planning for adults should be based on the food pyramid, including large amounts of calcium and dietary fibre, adequate amounts of carbohydrates and protein, small amounts of fats, sugar and salt. Three meals a day is enough for adults; additional snacks can be considered as dietary supplements. Adults are recommended to choose dishes with low fat cooking methods, such as steaming, boiling and grilling, when eating out or cooking at home. Besides, the ratio of 3:2:1 for cereals, vegetables and meat could be used as a reference for portions. Adults should try to limit the intake of fried foods, sauce and sugary drinks and choose healthy and low fat snacks such as low fat yoghurt, fruits, low sugar soy bean milk, etc.

(ii) In a balanced diet, a large proportion of energy should come from cereals/grains. Choose unrefined or whole grain products to increase the intake of minerals and fibre. Adequate protein-rich foods, such as lean meat, fish, poultry and bean products, are necessary to repair body tissue, production of enzymes and
antibodies. Calcium and vitamin D rich foods are essential for strong bones. Bone loss begins at about the age of 35, therefore, a diet rich in calcium and vitamin D could reduce the risk of osteoporosis in later life. Adequate folate intake is important for adult women before pregnancy to prevent neural tube defects in infant. The iron requirement is high for women throughout the childbearing years to replace blood loss during menstruation. Fruits and vegetables are important source of vitamins (A, C, folate), minerals (potassium), phytochemicals, and fibre. A diet high in fruits and vegetables are associated with lower risk of chronic diseases.

(iii) For manual workers, meals should be a balanced diet rich in carbohydrates such as rice, noodles and pasta or bread to provide enough energy to work. Manual work increases sweating which in turn increases the loss of water and electrolytes. It is essential to increase fluid intake (water, juice, soup) to regulate body temperature and avoid dehydration.

(iv) People with a sedentary lifestyle e.g. office workers, need to pay attention to energy balance to maintain a healthy body weight. Reduced physical activity together with an excessive energy intake from a large portion of energy-dense foods such as fast food, snacks increase the risk of obesity and other chronic disease in later life. The modern busy lifestyle has made fast food become popular because it is convenient and time-saving. High consumption of food in restaurants and fast food shops result in higher intake of fat, trans fat, salt and sugar while the intake in fruits and vegetables is low. Meals for office workers should be rich in nutrients but low in energy. It is recommended to include more vegetables and fruits as they are rich in dietary fibre and low in calories, instead of energy dense snacks such as ice-cream, chocolates and chips. They are also rich in vitamins, minerals and phytochemicals that are beneficial to health and may help to prevent chronic diseases. Higher fibre diet is also more filling and helps to prevent constipation. Energy-dense foods and alcohol should be eaten in moderation only.

(E) Elderly

(i) A balanced nutrient-dense diet is essential for maintaining good health of the elderly. Good nutritional status can help to prevent chronic disease and speed up recovery from illness, surgery or broken bones.

(ii) An elderly’s diet should include varied choices of food with most of the calories from carbohydrates, moderate in protein while low in fat, salt and sugar. Adequate protein is essential for tissue repairing, synthesis of immune cells and hormones. Lean meat or poultry without skin and low fat dairy products are good protein choices. Elderly are also encouraged to have adequate fruits, vegetables, whole grains products and legumes. These foods are rich source of vitamins, minerals and fibre. Adequate fibre and fluid can help to prevent constipation. Calcium and vitamin D rich foods are important to reduce risk of osteoporosis and bone
fracture. Besides, it is recommended to avoid too much fried foods and foods that are high in saturated fat, trans fat and cholesterol. Fatty foods are more difficult to digest. Diet high in saturated fat, trans fat and cholesterol increases the risk of heart disease and stroke. Elderly are also encouraged to limit salt, processed and sugary food intake. Higher consumption of salt and preserved foods increases the intake of sodium and the risk of high blood pressure. Sweets, confectionary and desserts are mostly high in fat (trans fat) and sugar and excessive intake may result in obesity. Apart from a balanced diet, exercise is encouraged for the elderly. Exercise can prevent obesity, loss of muscle mass and weight-bearing exercises can also prevent loss of bone minerals.

(iii) The elderly are recommended to have 3 main meals with 1-2 snacks. Snacks are optional for those with good appetite but are important for those with small or poor appetite for additional calories and nutrients to main meals.

(iv) Food provided for the elderly should be easy to chew and digest. Choose soft foods e.g. bean curd, fish, melon-type vegetables or chop the meat or poultry into smaller pieces for those with chewing problems.

(v) Try to use low fat cooking methods such as steaming, boiling, stir-frying with little oil and use of herbs and spices to enhance the flavour of dishes. Make dishes attractive by combining foods of different colour, shapes and texture.

(vi) Economic food choices include seasonable vegetables, less expensive protein source such as eggs, bean curds and soy bean products, legumes are recommended for those with a limited budget.

(vi) Food consumption by the elderly could be enhanced if food is provided in a relaxed, comfort and supportive environment.

5.2.2 Planning meals for people with special dietary needs

(A) Vegetarians

(i) Vegetarians are people who consume plant-based foods as their major protein sources and exclude meat, poultry and fish. Vegetarians practice different degree of strictness depending on the beliefs of the individual or family. Some people eat animal products such as milk and eggs but not animal flesh. Others eat plant foods only.

(ii) Vegan is one who eats only foods of plant origin. A lactovegetarian eats plant foods plus milk and other dairy products. An ovovegetarian includes eggs as the only source of animal protein. An ovolactovegetarian consumes milk, dairy products and eggs in addition to plant foods.
(iii) Vegetarian diets can be healthful as long as the foods are selected and prepared appropriately. There is evidence that a well-planned vegetarian diet is nutritionally adequate, healthful and provides benefits in prevention of certain chronic disease such as cancer and heart disease. Meal planning for vegetarians could be based on the modified food pyramid (below).

**Figure 5.2** Vegetarian food pyramid (Source: American Dietetic Association and Dietitians of Canada: Position on vegetarian diets. J Am Diet Assoc 103:748, 2003.)

(iv) As vegetarian diets eliminate foods from animals, it is necessary to find substitutes for the nutrient-dense animal products. The general healthy eating principle also applies to vegetarian diets. Choose a variety of foods including whole grains, vegetables, fruits, legumes, nuts, seeds and if desired, dairy products and eggs in the diet. Minimise the intake of sweetened, fatty and heavily refined foods and select low fat dairy products to reduce saturated fat intake. Vegetable protein foods contain fewer essential amino acids than animal proteins (meat, eggs, and dairy products). They must eat larger and varied amounts of vegetables and cereals.
to compensate for the lower quality protein in them. It is recommended to eat a mixture of plant protein foods such as soya beans and soya products, other beans, pulses, nuts and cereals to make up for the deficiencies of essential amino acids. Soya bean products are complete protein sources and should be included in the diet. Other nutrients of concern are iron, calcium and vitamin B12. Source of iron from vegetarian diets include beans, dark green vegetables, dried fruits and iron-fortified cereals/oats; however their absorption is less than from animal source. Vitamin C rich foods in each meal should be included to enhance iron absorption and prevention of anemia. For those who do not consume dairy products, intake of calcium would be impaired. It is advised to choose more beans (particularly soya and soya products), nuts, dark green vegetables, calcium-fortified food such as soymilk, juice or cereals to achieve an adequate intake. Vitamin B12 deficiency is common for vegans. They are advised to take supplements of this vitamin to prevent pernicious anemia.

(v) We can use a variety of fresh and colourful ingredients, and vegetarian seasonings such as herbs, spices and vegetable stock with different cooking methods to make the dishes nutritious, attractive and tasty.

(B) Invalids & convalescents

(i) People who are ill or recovering from an illness, surgery or accidents have special nutritional requirement. A nutritional adequate diet is important for wound healing, reduce complications and enhance recovery. During illness e.g. fever, infection, bone fracture, etc., our body needs extra protein for synthesis of new tissue. Besides, an adequate intake of vitamins, minerals and fluid are essential. Vitamin A, C, E, zinc, selenium and magnesium are shown to enhance wound healing. An adequate of iron intake is needed to prevent anemia as a result of blood loss and enhance healing of wound. For those with bone fracture, adequate calcium and protein are required for bone repairing. Fluid is another vital element for regulation of body temperature during fever and maintains skin integrity for wound recovery.

(ii) It is common for patients to have poor appetite and feel tired and weak during illness, therefore, the food provided should be easy to eat and digest, and contain a balance of nutrients. Texture could be modified to suit the patient’s needs. For example, soft and cut up food for those with swallowing and chewing problems or high-energy nutritional supplements for those with reduced food intake. Besides, serving well-presented and palatable food by using a variety of colourful and different textured ingredients could enhance the appetite of patients. Small frequent meals served at every 3-4 hours may be a good option to achieve adequate intake. High fat foods are not recommended to avoid indigestion and strongly flavoured / odoured foods may affect patients’ appetite.
(iii) During convalescence, the patients gradually recover and their appetites slowly return. They are more likely to eat normal diets in small portions. A balanced meal with adequate amount of nutrients is essential for their recovery. Three main meals plus 1-2 nutritious snacks are recommended for patients with a small appetite.

(C) Pregnancy

(i) An expectant mother’s nutritional status can affect the outcome of pregnancy. Nutrients are carried from mother’s bloodstream through the placenta and umbilical cord into the baby’s bloodstream and therefore the diet of a pregnant woman is important for a healthy baby and maintaining own health. The requirements for certain nutrients increase during pregnancy. Energy and protein needs increase in order to sustain the development of fetus, placenta and the maternal tissue. Folate is required for correct development of the brain and nervous systems in the fetus. Vitamin B12 and iron are required for the synthesis of red blood cells and prevention of anemia. Vitamin C can enhance absorption of iron and help to form connective tissues. Zinc is involved in protein synthesis and cell development. An inadequate intake may affect fetal growth and is associated with low-birth weight infants. Besides, calcium, phosphorus and magnesium are essential for skeletal and dental growth.

(ii) Meal planning for pregnant women could be based on the food pyramid for adults. A variety of foods should be chosen to achieve a balanced diet. The extra calories can be obtained from an additional serving from each of the following food groups – grains, vegetables, fruits and low-fat dairy products.

(iii) Pregnant women may experience problems such as morning sickness, heartburn and constipation that affect the nutritional status. Hormonal changes cause nausea and vomiting of pregnancy. This can be relieved by small frequent meals, dry or cold foods (e.g. biscuits, toast, dry cereal, sandwiches, cold vermicelli etc.). Heartburn can be controlled by avoiding spicy or acidic foods. Adequate fluid and a high-fibre diet together with regular exercise can relieve constipation during pregnancy.

(iv) Pregnant women are advised to avoid smoking and alcohol. Smoking increases risk of miscarriage, giving premature birth and low-birth weight baby. Heavy alcohol drinking could result in fetal alcohol syndrome (FAS) in infants and result in physical, cognitive and behavioural problems.

(D) People with lactose intolerance

(i) Lactose intolerance, also called lactase deficiency, is caused by a shortage of the enzyme lactase, which is produced by the cells that line the small intestine. Lactose is a kind of disaccharide found in a large amount in milk protein (up to
Lactase breaks down milk sugar into two simpler forms of sugar called glucose and galactose, which are then absorbed into the bloodstream.

(ii) People who do not have enough lactase to digest the amount of lactose they consume may feel very uncomfortable when they digest milk products. Common symptoms, which range from mild to severe, include nausea, cramps, bloating, gas, and diarrhea. Symptoms begin about 30 minutes to 2 hours after eating or drinking foods containing lactose. The severity of symptoms depends on many factors, including the amount of lactose a person can tolerate and a person’s age, ethnicity, and digestion rate. Not all people deficient in lactase have the symptoms commonly associated with lactose intolerance, but those who do are said to have lactose intolerance.

(E) Coeliacs

(i) Coeliac disease is an inflammatory condition of the small intestine resulted from sensitivity to gluten, a protein found in wheat, rye and barley. This disease is more common among people of European origin and is rare among Japanese and Chinese. It is developed in genetically predisposed people and can be diagnosed at any age from early childhood to late adult years.

(ii) People with coeliac disease are called coeliacs, the lining of their small intestine will be damaged when gluten is consumed. The inflammatory condition impairs the ability of the intestine to secrete enzymes, digest and absorb nutrients, including carbohydrates, proteins, fats, minerals (e.g. calcium, iron) and fat-soluble vitamins. This increases risk of malabsorption, malnutrition and possibly malignancy of the small intestine. The symptoms of coeliac disease include vomiting, chronic diarrhoea, abdominal cramps and bloating, pallor, weakness, appetite loss, weight loss and impaired growth in children.

(iii) The obvious sources include wheat, rye, barley, and oats, which are usually found in the form of flour. Therefore ordinary bread, pasta, cakes, biscuits, pastries, puddings and pies should be avoided. Coeliacs should choose rice, corn, potato, cornstarch, sago, rice vermicelli, rice cereal products and foods made from gluten free wheat flour. They need to have a life-long exclusion of gluten from the diet combined with medications if necessary.

5.2.3 Planning meals for special occasions

(A) The family meal pattern usually includes three main meals, breakfast, lunch, dinner and sometimes snacks. Breakfast is important to replenish nutrients (blood sugar) for body’s functioning after an overnight’s sleep. Foods for breakfast should include enough carbohydrates (noodles, wholemeal bread, breakfast cereals, congee) and moderate protein foods (lean meat, milk and dairy products, eggs).
Lunch and dinner choices can follow the principles of healthy eating with cereals or cereal products as major food, moderate amount of fish, seafood, legumes, egg and lean meat. It is advised to prepare foods with low fat cooking methods such as steaming, boiling, stewing, grilling and stir-frying with little oil. Chinese family dinner usually consists of 2-3 dishes that are shared by family members, whereas western style dinner usually includes soup, appetiser, main dish, dessert and/or a drink that are served on an individual basis. Healthy snacks such as low fat dairy products, sandwich, fruits, wholemeal biscuits, chestnuts, sweet corn can supplement main meals for those with additional nutrition needs and small appetite.

(B) Meal planning for special occasions/celebrations such as social gatherings, parties and festivals should take into consideration of the occasion, venue, age and number of guests, style of meal (sit down or buffet type, Chinese or Western meal) and special food if necessary. Prepare appropriate tableware, napkins, tablecloth and home decorations (flowers or other ornaments), seats and tables for celebrations or parties. Background of guests, their age, gender, total number, food preference, nutritional needs and special ethnic or religion are factors for consideration when planning meals. A good meal should be nutritious, well cooked with careful combination of foods and flavours. For example, food for a birthday party for school-age children should be colourful, attractive, and easy to manage, in bite size, small packs and include more body building foods for growth. Dishes can be prepared using different methods (e.g. grilling, baking, boiling) to give various texture (e.g. soft, firm, crispy) and served either hot or cold. Special food can be prepared for special occasions or festivals e.g. birthday cake for birthday party; Easter chocolate eggs for Easter festival, Chinese turnip cake for Chinese New Year etc. It is also advised to shop and plan for food in advance to allow changes of food in the menu if they are not available.

(C) Meals for outing should be well planned and prepared. Depending on the duration of the outing, the meal should provide enough nutrients and energy to sustain daily activities as that from a main meal. It should be well-balanced by choosing foods from the three basic food groups and include a suitable drink. Choose foods that are easy to eat, pack and carry, and can be kept for a longer time such as bread, fruits, packed drinks or canned foods. Use thermal containers with insulation or spaces for ice packs to keep food/drinks at a safe temperature to avoid bacterial growth. Food can be packed in a plastic box for easy transport to avoid crushing/damage.
5.3 Principles of Meal Planning

5.3.1 Lifestyle and family living

(A) Healthy eating principle should be encouraged throughout the lifecycle. Meal planning can be based on the food pyramid for the respective age and adjusted according to the occupation and health conditions to ensure adequate intake of energy and nutrients.

(B) Social and psychological needs are other factors to consider in meal planning. Our enjoyment of food is affected by the appearance of food and the environment. A well-presented, colourful, tasty and aromatic meal enhances our appetite. Social or family gatherings in a happy and relaxed atmosphere can make mealtime pleasurable as it provides an opportunity for relaxation, sharing and casual conversation. Psychological factors also affect one’s appetite. Stress may impair one’s digestion and intestinal functioning and result in indigestion, diarrhoea and constipation. People who are ill may not feel like eating. Besides, food preference affects food choices and food acceptance.

5.3.2 Financial and resource constraints

(A) People with a limited food budget are advised to plan their meals based on the food pyramid. Many people prefer to buy foods high in fat and sugar which can satisfy hunger for longer rather than fresh fruits and vegetables. It is advised to shop around for good value of food. Discount on certain food items in wet- and super-markets are often given before the time of closure. They can choose cheaper cuts of fish or meat such as frozen chicken and fish fillet rather than fresh meat and include other cheaper protein source such as eggs, soya bean products e.g. tofu, soybean sticks, etc. in the diet.

(B) Time availability also affects food choices. People on the go are more likely to choose fast food and convenient food. Most of them are high in calories, fat, sodium while low in dietary fibre, vitamins and minerals. People can plan their meals a week in advance and then purchase and prepare appropriate food during weekend. Some dishes such as stewing pork/beef/chicken can be prepared in advance and kept in freezer for the next meal. Those that take longer time should be cooked first and those that are cooked in a short time should be put on last. Simple dishes and cooking methods such as steaming fish/chicken with stir-fry or boiled vegetables are recommended when time is limited. Use the time during which the food is cooking to assemble other cold dishes and set the table.

(C) Cooking facilities is another factor to consider when planning meals. Cold dishes require refrigeration while hot dishes needs equipment like cookers, oven, pans
etc. Special food for occasions such as birthday cakes can be prepared with different equipment. For example, we can make non-baked cakes when oven is not available or use other equipment such as steamer, microwave or cooker with cake-making functions.
Learning and Teaching
References

1 Family and Lifestyle
2 Consumer Behaviour in Food Choices and Implications
3 Health and Nutrition
4 Chemistry of Foods
5 Diet and Meal Planning
6 Food Commodities
7 Food Preparation Technology
8 Food Hygiene
9 Food Spoilage and Food Poisoning
10 Food Preservation Technology
11 Food Culture
12 Food Science and Technology Extended Study
13 Food Product Development