COURSE DESCRIPTION

Most individuals enjoy sitting down and eating a delicious meal. Food provides an opportunity to socialize and, if the food is nutritious, it also supports a healthy body and mind. However, when individuals are stressed, they are not able to utilize the nutrients they eat as effectively as when they are relaxed. If stress causes an individual to eat food that is not nutritious, health issues can result. Nutrition, stress, and the immune system are closely related.

The goals of this course are to describe the relationship between food and emotions; to explain the stress response; to discuss the effects of stress on nutrition and health; to define mindful eating and methods of eating mindfully; and to examine elements of nutrition that support a healthy immune system.

COURSE OBJECTIVES

Upon completion of this course, you will be able to do the following:

1. Describe the relationship between food and emotions.
2. Describe the domino theory as it relates to nutrition and stress.
3. Discuss the effects of stress on digestion, metabolism, and health.
4. List the three steps and seven skills of mindful eating.
5. Describe aspects of nutrition and eating that support a healthy immune system.
INTRODUCTION

Many individuals take great pleasure in sitting down to a good meal. Food provides many nutrients, but food also provides emotional joy. Eating “comfort food” (eating to relax or satisfy other emotional needs) is a popular way to relieve stress. Indeed, nutrition and stress are inextricably linked.

In the United States, the quantity of available food is the envy of the world. Yet our food quality is not as admirable given the amount of processed, high-sugar food we eat—food that also contains herbicides, pesticides, hormones, additives, antibiotics and other less-than-healthy elements. These toxins become stored in the body (“bioaccumulate”) and compromise/stress the immune system, leading to a host of health-related problems. When emotional stress is also present, any health-related problems are magnified (Seaward, 2012). In addition, many Americans rush through their meals; drive through fast food restaurants on their way to or from work; buy prepackaged, processed meals because they are too busy to prepare healthy, home-cooked meals; and do not eat in a mindful way.

Nutrition, or more accurately food, serves as a pacifier for most of us. It is a stress reliever and social activity. For example, when they gather for family reunions, individuals eat and often drink more than they normally would. They eat when they are frightened (think about how many people eat popcorn in a movie theater watching a scary movie), they eat out of boredom, and they eat to calm their nerves. Eating has become more than a means of physical survival. It is a popular relaxation technique. Yet, for many people, eating as a coping technique is often abused. “Food and mood go together like peanut butter and jelly” (Seaward, 2012, p. 523).
Nutrition, stress, and the immune system are also closely related. The stress response causes individuals to eat less-than-optimal food, and poor food choices stress the body. This cycle can lead to health issues ranging from mild (such as more colds or allergies) to severe (heart disease and cancer).

THE CONNECTION BETWEEN STRESS AND NUTRITION

Stress affects nutrition in many ways. It compromises the ability of the body to digest, absorb, metabolize, and eliminate nutrients (such as carbohydrates, proteins, fats, minerals, vitamins, and water) because the body is in a state of “fight or flight.”

According to Seaward (2012), the relationship between stress and nutrition can be illustrated through the use of the four dominos theory:

- **Domino 1**—Stress begins to deplete nutrients (such as water-soluble vitamins and several essential minerals) in the body.

- **Domino 2**—Nutrients depleted with stress are not restored. The consumption of calorie-rich, nutrient-poor foods (such as comfort foods, junk foods, fast foods, and processed foods) often accompanies stress. Combined with nutrient depletion, foods low in nutrients further stress the body, which is already trying to compensate for the malnourishment it is experiencing.

- **Domino 3**—The stress response remains chronically elevated when an individual continues to eat certain food substances (such as caffeine,
sugar, processed flour, and salt). Healthy nutrients remain depleted, and unhealthy food consumption contributes to obesity and the ingestion of toxins. Elevated stress may also lead to alcohol consumption, further taxing the liver (which filters toxins from the body). The effectiveness of the body’s immune system continues to diminish.

**Domino 4**—Stress effects are reaching a peak, poor food choices continue, immune function is in severe decline and, when this domino falls, health is greatly compromised and can result in potentially serious health conditions (e.g., cancer, diabetes, colds, flu, etc.).

**Other Health Effects of Stress**

In addition to the domino effect described above, the stress response increases the body’s metabolic rate by mobilizing carbohydrates and fats into the bloodstream for energy production (as part of the “fight or flight” response). The stress response depletes necessary nutrients, vitamins, and minerals, creating a cyclical process that leads to a weakened immune response and poor health (Seaward, 2012). The following can also occur:

- Stress increases cortisol levels that increase the production of the chemical neuropeptide Y (NPY) in the brain. NPY is believed to be responsible for cravings for carbohydrate-rich foods (especially sweet food). NPY levels are high in the morning but when stress remains high
during the day, it can create the urge for sweets all day long (Levine, Kotz, & Gosnell, 2003; Seaward, 2012).

- Stress increases the production of free radicals in the body. These highly reactive oxygen particles are commonly found in air pollution, tobacco smoke, radiation, herbicides, and rancid fatty foods. They are produced by the body under normal metabolic functioning and are normally removed by vitamins C, E, and beta-carotene. However, under stressful conditions, free radicals can be produced in much higher numbers and affect the body in many ways by doing the following (Seaward, 2012):
  
  o Changing the permeability of the cell membrane (possibly allowing viruses and bacteria to enter the cell)
  o Disturbing the transportation of essential nutrients into the cell and byproducts out of the cell
  o Destroying the mitochondria (where cell respiration takes place) and compromising the energy capabilities of the cell
  o Attaching to the DNA structure of the cell and inhibiting the coding process that regulates cell reproduction and function
  o Distorting the ability of RNA to transmit messages throughout the central nervous system

- Excessive consumption of alcohol is linked with suppression of the immune system and depletion of water-soluble vitamins and minerals, essential fatty acids, and proteins (Christensen, 2011; Seaward, 2012).
An excess of simple sugars tends to cause major fluctuations in blood sugar, and deplete vitamin stores, particularly B complex vitamins. The B complex vitamins are crucial for optimal central nervous system function and their depletion can result in fatigue, anxiety, and irritability. Blood sugar fluctuations can also result in fatigue, irritability, and headaches (Marina, 2011; Seaward, 2012).

Stress often leads to eating fast foods, since people who are stressed rarely have time to make homemade meals. Food prepared in restaurants or fast food chains tends to be higher in sodium, sugar, and saturated fats than foods prepared at home. The portions of food eaten outside the home are also larger, higher in calories, and lower in nutrient value than foods prepared at home. Over time, regularly eating these foods can lead to high blood pressure, cardiovascular disease, diabetes, and obesity (Odegaard, Koh, Yuan, Gross, & Pereira, 2012).

Caffeine stimulates the sympathetic nervous system and is quickly absorbed into the bloodstream with a direct effect on the brain. The stimulant effect of caffeine triggers the release of several stress hormones, creating a cycle of heightened awareness and fatigue when the body finally metabolizes the caffeine. As a well-documented diuretic, caffeine has been widely reported to decrease vitamin D and calcium uptake, as well as decrease bone mineral density. This can lead to accelerated bone loss and increase risk for osteoporosis. Vitamin D suppression can impact immune function (Rapuri, Gallagher, & Nawaz, 2007; Seaward, 2012).
Health and well-being are intricately tied to a healthy diet. Eating a nutritious diet requires an understanding of how stress affects food choices and metabolism. Making wise choices about the type of food eaten so stress is reduced, and considering why, where, when, and with whom food is eaten is essential. Healthy eating also means eating mindfully.

**MINDFUL EATING**

Many individuals eat mindlessly, gulping down food while they are in front of a television, working at their desks, or driving a car. Others overeat because of guilt, loneliness, boredom, or anxiety. This mindless eating can lead to overeating because individuals may not be fully aware of why they are eating, what they are eating, and of the actual sensations of eating (such as the taste, smell, and texture of food, or the feeling of being full or satisfied with the food eaten).

The hypothalamus (which registers emotional feelings in the brain) also controls appetite. The hypothalamus is an area of the brain that produces hormones that control many different body functions, including hunger (Rennert, 2011). When food enters the stomach, the brain receives calming messages and the intensity of neural stimulation to the rest of the body is decreased. The body senses it is full and is more relaxed. This “mind-body” connection is a powerful and direct connection.
Mindfulness is defined as “being present” or being “in the moment” in a nonjudgmental way. Mindfulness is about being aware, whether it occurs during work, a walk, when enjoying the scenery, or while eating. Mindfulness increases the awareness of thoughts and feelings and reduces an individual’s reactivity to emotions, thoughts, and cravings. Mindfulness helps individuals connect to the moment and actually changes the neural connections in the brain. Mindful eating involves bringing awareness to the eating experience. It is not a diet; there are no recipes, rules, or menus; and there are no foods that are off-limits (Albers, 2008). Mindful eating is about experiencing food more intensely. When the rhythm of life seems rapid, this pace can affect the ability of individuals to slow down and “check in” with themselves. Mindful eating is one way to slow down. It is about being aware of what is on one’s mind when one is eating (Gordinier, 2012).

If individuals wish to assess whether they are eating mindfully, they can ask themselves the following questions (Albers, 2008):

- Do I eat even when I am full?
- Do I continue to snack until I feel bloated and uncomfortable?
- Do I mindlessly snack on foods I don’t like, just because they are available?
- Do I “zone out” when I eat?
- Do I forget (or not even notice) how a food smells, tastes, or feels when I eat it?
- Do I eat when I feel anxious?
- Do I often multitask when I eat?
- Do I stand up (or watch TV) when I eat?

If any of these questions were answered yes, then the individual is probably not eating mindfully and is not as present as possible when eating.

According to Albers (2008), there are three steps to eating mindfully.

1. **Tune in to the physical characteristics of food.** This involves being aware of all your senses. Notice how food tastes, how it feels on the tongue, how hot or cold it is, and how it smells. The mouth can be used as a magnifying glass to zoom in on the food and all its subtle and not-so-subtle characteristics.

2. **Tune in to the repetitive habits and the process of eating.** This step involves taking the time to notice how you are eating. Are you on
“autopilot,” eating out of habit, eating at the same time every day, multitasking while eating, or eating the same foods over and over?

3. **Tune in to mindless eating triggers.** This step involves being extremely aware of what prompts you to start and stop eating. Is eating triggered by a bad day at work, boredom, negative mind chatter (such as “I’m so lazy!”), or stress? Being aware of how the body and mind feel between meals, or when it is time to eat, means that triggers can be anticipated and better food choices made as a result.

In addition to the three steps described above, a mindful eater cultivates seven basic skills (Albers, 2008; The Center for Mindful Eating, 2012):

1. **Awareness** of one’s body when it is hungry, stressed, in pain, and filled with emotions. It involves awareness of the positive and nurturing opportunities available through food preparation and consumption by respecting one’s own wisdom.
2. **Observation** of one’s body, feelings, and thoughts, especially those that trigger mindless eating.
3. **Being in the moment** so one is fully present to the sensations of eating and nothing else.
4. **Being mindful of the environment** in which eating takes place so a relaxing, supportive location is used and individuals who are also eating are positive and relaxed.
5. A **nonjudgmental attitude** toward food choices is cultivated so criticism and scrutiny are decreased, and negative (judgmental) thoughts are released. It involves knowing that there is no right or wrong way to eat but varying degrees of awareness surrounding the experience of food.
6. **Letting go** of the way things (such as body size) “should be” and staying present with the feelings that arise without using food to numb those feelings.
7. **Acceptance** of the way things are so the other steps become easier to implement.

Mindful eating can also include being aware of with whom one is eating. Enjoying a relaxing meal with people who are positive and supportive reduces stress and creates a much more pleasant dining experience than eating while driving, or eating during a business meeting. In addition, mindful eating may involve an understanding of how the food that is about to be eaten arrived on the plate. This awareness can extend to making a conscious choice to eat certain types of food, or eat food that is raised humanely, and with respect for the animals and humans.
who have been involved in its production. Mindful eating involves an awareness of the interconnection of the earth, living beings, cultural practices, and the impact of food choices on these systems (The Center for Mindful Eating, 2012).

EATING FOR A HEALTHY IMMUNE SYSTEM

Because many foods today are eaten mindlessly, are often high in sugar and fat, and may contain GMOs, hormones, antibiotics, pesticides, herbicides, fungicides, and heavy metals, the human body can easily become stressed, resulting in compromised health. However, there are many ways in which food can support the immune system, reduce stress on the body, and improve overall health, vitality, and well-being.

The old adage, “Let food be your medicine, and let medicine be your food,” supports the guidelines below (Pollan, 2009; Seaward, 2012):

- Consume a good supply of antioxidants (such as beta carotene, vitamins C and E, and selenium). These are found in fresh fruits, vegetables, and fresh herbs. Choose foods that will eventually rot, as this assures they aren’t loaded with preservatives.
- Eat an adequate amount of fiber (about 30 to 40 grams/day). Fiber helps the body rid itself of toxins that might be absorbed into the bloodstream. Fiber can be found in many foods but is especially plentiful in fresh fruits, vegetables, and some grains.
- Eat a “rainbow” of foods—foods of all colors—since these foods contain bioflavonoids (super antioxidants).
- Drink plenty of fresh, clean (filtered) water. Proper hydration helps eliminate toxins and metabolic byproducts.

- Eat organic foods as much as possible. Find ways to reduce or eliminate the consumption of pesticides, fungicides, herbicides, and fertilizers found in and on produce and dairy foods. Many of these are toxic and/or carcinogenic.

- Eat a wide selection of complete proteins to ensure you receive the proper amount of amino acids.

- Decrease your consumption of processed foods (such as junk food or fast food), antibiotics and hormones (found in dairy, beef, and chicken products), artificial sweeteners, and excitotoxins (such as monosodium glutamate [MSG]).

- Consider adding high-quality supplements and a probiotic to your diet. These help balance any lack of adequate nutrients, and the probiotics support immune function by adding beneficial bacteria to the gastrointestinal tract.

- Decrease the consumption of “white” foods (simple sugars, white breads, white flour, white rice, etc.). Avoid foods containing high-fructose corn syrup or foods that have some form of sugar (or sweetener) listed in the top three ingredients. They have little nutritional value and cancerous tumors appear to thrive more in the presence of simple sugars.

- Avoid genetically modified organisms (“Frankenfoods”) that are known to promote allergy problems.

- Decrease the consumption of total fats in the diet, especially trans fatty acids (e.g. partially hydrogenated oils) and saturated (solid) fats.

- Consume a good supply of omega-3s (found in cold-water fish and flaxseed oil), and balance the ratio of omega-3s with omega-6s (found in vegetable oils).

- Replenish nutrients depleted by stress (such as vitamin B-complex, as well as other vitamins and minerals).

- Prepare food in a healthy manner (such as steaming versus frying) and avoid the use of a microwave oven (if possible).

- Consume foods with a proper pH. Many processed foods are acidic, which has been linked to diseases such as cancer.

- Consume a moderate amount of alcohol. High alcohol intake compromises liver and immune function.

- Consider how food is produced and delivered before purchasing. Choose locally grown, organic, free-range, 100% grass fed, humanely produced food whenever possible.

- Try to eat at least one meal a day that supports immune system function.

• Eat *real* food—food you can pronounce. There is a saying: “If your grandmother wouldn’t know what it is, don’t eat it.”

**SUMMARY**

Food is a stressor and stress reliever. Choosing nutritious food that supports a healthy body and mind is essential to overall vitality and well-being. Stress results in less effective utilization of available nutrients. If stress causes an individual to eat food that is not nutritious, or to eat mindlessly, health issues can result. Nutrition, stress, and the immune system are closely related. There are many ways to select foods that are nutritious, that reduce stress, and that contribute to a robust immune system.
REFERENCES


