Class 8
Chapter 10:
Sleep & Stress Management

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STILLY VALLEY HEALTH CONNECTIONS
PUBLIC HOSPITAL DISTRICT #3, SNOHOMISH COUNTY

1

Review Class 7 Homework

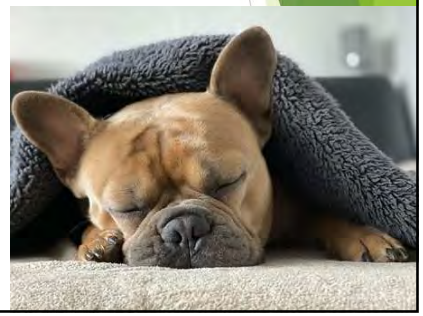
- Assess leisure-time and work-time sedentary behavior
  - Use a step counter or your smart phone
  - Complete the Activity/Inactivity Record – page 281
- Develop your FITT plan and get any needed supplies
- Calculate your Target Heart Rate Zones
- Implement your FITT plan > evaluate how it is going

How did it go?

2

What Happens During Sleep

- Optimal learning >> processing of information
- Memory >> short to long-term storage
- Rest and recovery of muscles
- Fasting and digestion break
- Balance of hormones
  - Including stress & appetite hormones
- Repair of organs
- Adequate immune function



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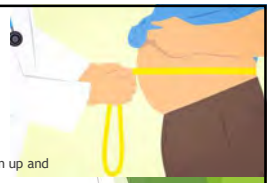
Quantity and Quality Matter

- American Academy of Sleep Medicine recommends at least 7 hrs sleep/night
- Best weight control for free-living individuals is seen between 7-9 hrs/night
- Best BG control between 7-8 hrs seen in studies

- Obstructive Sleep Apnea >> Vicious cycle with weight and BG control
  - Do you have any of the following:
    - Loud snoring
    - Daytime sleepiness
    - Morning headaches
    - Dry mouth/throat when waking
    - Episodes of not breathing during sleep
    - Family history of sleep apnea
    - Obesity
  - Very important to get checked and to treat > wear c-pap!

4

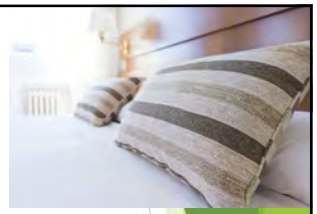
Effects of Poor Sleep



- Daytime sleepiness
- Mood disturbances
- Concentration/attention issues
- Cognitive impairment
- Driving accidents
- Inadequate growth in children/teens
- Inadequate cellular repair
- Increased risk of chronic conditions
- Strong Associations:
  - Obesity
    - Appetite hormones: ghrelin up and leptin down with poor sleep
    - Changes in choices
  - Diabetes (7-8 hrs optimal length)
    - Poor sleep reduced HGH > repair hormone
    - Poor sleep increases Cortisol > stress hormone
    - Insulin sensitivity reduced with sleep restriction
  - Heart Disease

5

Get a Better Night's Sleep



- Help your circadian rhythm
  - Adequate light exposure during day, especially morning
- Mind the light at night
  - Limit artificial light before bed and during the night
  - Avoid screen time or set to dark/night mode an hour before bed
- Create a routine
  - Try to stick with your sleep/wake schedule every day – even on weekends
  - A pre-bed ritual can also be helpful to indicate it is time to sleep: tea, journaling, reading, meditation, stretching/yoga
- Cool off
  - A drop in temperature can help with falling asleep: bath, shower, hot-tub before bed
  - A cooler room can help with getting better quality sleep: 60-67 degrees

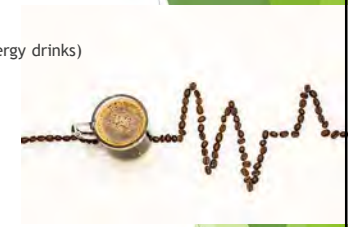
6

Get a Better Night's Sleep

- Silence the noise
  - Use a fan, other white noise, or earplugs if noises disturb you during the night
- Get comfy
  - When did you last replace your mattress? Is your bed crowded?
  - Are the sheets and blankets season appropriate? Is the bedroom a haven for rest?
- Don't fret
  - Develop some mediation, breathing, or prayer exercises for middle of the night wakefulness
  - Sometimes actually getting up, journaling, having a cup of tea or reading can be helpful rather than staring at the clock
- Be active every day
  - Exercise usually results in sounder sleep
    - Be careful of timing, as sometimes late-night exercise can make you more wakeful

7

Get a Better Night's Sleep



- Avoid caffeine (coffee, black/green tea, chocolate, energy drinks)
  - Stimulant that increases alertness
  - Half-life of 6 hrs – some people take longer to metabolize
- Eat wisely
  - Avoid large meals within 3 hours of bedtime
  - Don't go to bed hungry
- Drink wisely
  - Alcohol interferes with circadian rhythms, blocks REM sleep, increases urination and can increase snoring
- Avoid nicotine
  - Similar effects as caffeine – it is a stimulant
- Talk with your health care provider
  - Don't ignore warning signs of poor sleep >> have a conversation

8

Depression & Mental Health Concerns

- Recognizing Signs/Symptoms:
  - Loss of pleasure in doing things you used to enjoy
  - Difficulty sleeping or sleeping more than usual
  - Eating more of less than usual; fast weight gain or loss
  - Trouble paying attention
  - Lack of energy
  - Nervousness
  - Feeling guilty and like you are a burden to others
  - Feeling like nothing matters or you don't want to go on
- Interferes with self care:
  - Energy to prepare and eat healthy meals
  - Getting regular physical activity
  - Taking medications
  - Following up with healthcare providers
  - Checking blood sugar or self-monitoring other health metrics

9

Stress Management (this includes pain!)

- Physical and emotional stressors can wreak havoc on your BG & weight
- See handout on Stress Management with Nutrition Tips
- Find coping mechanisms other than food to help relax & calm:
  - Talking with a friend, coach or therapist
  - Join a support group or other club
  - Journaling thoughts/emotions
  - Physical activity and getting outside
  - Time with a loved one: human or pet
  - Meditation/prayer/breathing
  - Singing/chant/music
  - Progression relaxation
  - Replacing negative thoughts with positive
  - Getting out of situation causing stress

10

42 Other Factors to Consider

Medication

- → ↓ 10. Medication dose
- ↓ ↑ 11. Medication timing
- ↓ ↑ 12. Medication interactions
- ↑↑ 13. Steroid administration
- ↑ 14. Niacin (Vitamin B3)

Environmental

- ↑ 34. Expired insulin
- ↑ 35. Inaccurate BG reading
- ↓ ↑ 36. Outside temperature
- ↑ 37. Sunburn
- ? 38. Altitude

Biological

- ↑ 20. Insufficient sleep
- ↑ 21. Stress and illness
- ↓ 22. Recent hypoglycemia
- → ↑ 23. During-sleep blood sugars
- ↑ 24. Dawn phenomenon
- ↑ 25. Infusion set issues
- ↑ 26. Scar tissue and lipodystrophy
- ↓↓ 27. Intramuscular insulin delivery
- ↑ 28. Allergies
- ↑ 29. A higher glucose level
- ↓ ↑ 30. Periods (menstruation)
- ↑↑ 31. Puberty
- ↑↓ 32. Celiac disease
- ↑ 33. Smoking

11

Homework

- Assess your current sleep quality and quantity
  - Use a journal, app, or smart device to track
- Identify specific behaviors you can control to improve sleep
  - Pick 1 to implement immediately
- Think about potential mental health barriers
  - Are there any that you think should be addressed
- Identify strategies to help manage stress
  - Pick 1 to implement immediately

Next Month:

- Chapter 11: Getting Your Head in the Game

Thank You and Have a Great Month!

12

Food

↑↑ 1. Carbohydrate quantity
→↑ 2. Carbohydrate type
→↑ 3. Fat
→↑ 4. Protein
→↑ 5. Caffeine
↓↑ 6. Alcohol
↓↑ 7. Meal timing
↑ 8. Dehydration
? 9. Personal microbiome

Medication

→↓ 10. Medication dose
↓↑ 11. Medication timing
↓↑ 12. Medication interactions
↑↑ 13. Steroid administration
↑ 14. Niacin (Vitamin B3)

Activity

→↓ 15. Light exercise
↓↑ 16. High-intensity and moderate exercise
→↓ 17. Level of fitness/training
↓↑ 18. Time of day
↓↑ 19. Food and insulin timing

Biological

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Behavioral & Decision Making

↓ 39. Frequency of glucose checks
↓↑ 40. Default options and choices
↓↑ 41. Decision-making biases
↓↑ 42. Family relationships and social pressures

Nutrition for a Good Night's Sleep.....zzzzzzz

Circadian Rhythm

Your circadian rhythm is your personal internal 24-hour clock, in other words, the schedule your body prefers to run on or follow. This cyclic process impacts sleeping and eating patterns, bowel movements, urination, insulin and glucose regulation, hormone production, body temperature and so much more.

Understanding hormone production, importance of sleep hygiene, nutrients for brain regulation of sleep, and appropriate timing of meals/snacks is essential for learning how to improve your sleep via lifestyle modifications.

How Hormones Affect Sleep

Hormone production is heavily influenced by your circadian rhythm. The main two "sleep" hormones relying on a consistent circadian rhythm to function properly are Cortisol and Melatonin.

Cortisol, known as one of the body's "fight or flight" hormones is released in response to stress. Cortisol is at its lowest level in the evening to allow for optimal sleep. Prolonged release of cortisol due to long-term stressors, such as work, could result in the inability to fall asleep (insomnia). Melatonin acts in quite the opposite fashion. It lowers body temperature and induces drowsiness to allow for optimal sleep. In a normal healthy individual, Melatonin is released around 8-9pm in response to darkness, and stops being produced around 7:30am in response to light. Because Melatonin secretion is dependent on light, it is essential to turn lights, computers, TVs and phones off an hour before bed to allow for the release of Melatonin.

Sleep Hygiene

How can you control your stress before bedtime? Focus on what is called your "sleep hygiene". These are practices and habits that allow for consistent satisfactory sleep on a regular basis. By doing this, you will reduce stress and support hormone production for a good night's sleep. Here are eight tips to improve your sleep hygiene:

1. Do not nap during the day.
2. Go to bed when tired.
3. Avoid stimulants such as caffeine 6 hours prior to bed.

4. Avoid alcohol close to bedtime.
5. Incorporate ≥10 minutes of aerobic exercise each day. Avoid vigorous exercise 3 hours prior to bed.
6. Optimize your environment (60-67'F; no phone, TV, lights, disruptive noises; remove pets from bedroom).
7. Establish a bedtime routine.
8. Avoid social jetlag. Go to bed and wake up at the same time on weekdays and weekends.

Nutrients for Brain Regulation of Sleep

Protein- When protein is digested and broken down to its individual amino acids, your body uses the essential amino acid Tryptophan, to manufacture Melatonin.

Vitamin C- This powerful antioxidant is most important for reducing oxidative damage in the brain, allowing neurotransmitters to work properly and effectively.

B-Complex Vitamins- This group of eight vitamins work to metabolize chemical messengers called neurotransmitters, control the amount of neurotransmitters found in your brain tissue, and aid in the production of Serotonin, a natural mood-enhancer that is used to synthesize Melatonin.

Sample Meals

Create meals with a good source of protein, Vitamin C, and B-Complex Vitamins (among other nutrients) to support brain regulation of sleep. Here are three examples:

- Roasted salmon, steamed broccoli, and brown rice.
- Spinach salad with roasted chicken, yellow bell peppers, tomatoes, and hummus with olive oil + balsamic vinegar dressing.
- Fortified breakfast cereal, plain greek yogurt, and a fresh orange.

Timing of Meals and Snacks

It is best to eat every 3-4 hours over your waking hours and incorporate carbohydrate, protein and fat at each meal/snack to maintain stable blood glucose levels. This helps prevent spikes in cortisol throughout the day. In addition, emerging nutrition research has concluded the following:

1. A shorter overnight fast (7-11 hrs) is associated with a lower body mass index (BMI).
2. Eating breakfast is associated with a lower BMI.
3. Breakfast as the largest meal may be associated with a lower BMI.

Behavioral Health Nutrition

a dietetic practice group of the Academy of Nutrition and Dietetics

BHN Fact Sheet: **Stress Management**

Stress is a state of mental or emotional strain that has come from a difficult or demanding situation. We all experience stress on a daily basis, but sometimes the stress is too much and has a negative impact on our physical and emotional health. Too much stress can result in headaches, changes in sleep patterns, fatigue or tiredness, decreased appetite as well as changes in hormone levels that may cause unwanted weight gain. This Fact Sheet will discuss the impact of stress on physical health as well as how to improve eating habits while under stress.

General Information

Being able to manage stress is important in maintaining both physical and mental health. Stress impacts everyone differently. However, stressful events whether major or minor trigger a physical response in our bodies referred to as a "fight or flight" response. This physical response causes our bodies to get ready to stay ("fight") or leave the situation quickly ("flight"). The body does this by dumping hormones or chemical messengers such as adrenaline and extra glucose or fuel into our system. Short term stress can have a positive impact on us by helping us have more energy and focus to face difficult situations or challenges. However, chronic stress or being constantly in "fight or flight" mode results in higher levels of hormones such as cortisol that lead to unwanted weight gain as well as other negative side effects such as difficulty fighting off colds or infections, high blood pressure, heart disease, cancer, digestive problems, and depression.

Nutrition Concerns/Implications

Chronic stress can impact a person's eating habits. Below are listed some of the possible side effects of chronic stress, reasons for the problem and nutrition tips.

Potential Side Effect of Chronic Stress	Potential Impact on Nutrition	Nutrition Tips
Changes in gut function: Negative impact on levels of helpful bacteria in the gut (flora) Changes in digestion and absorption including slowed stomach emptying, diarrhea and/ or constipation New or worsening heartburn, acid reflux, stomach ulcers, irritable bowel disease, altered bowel habits and chronic inflammation	May have negative impact on body's ability to break down and use nutrients	• Improve gut health by eating foods that help promote and maintain gut function including: non digestible fiber from fruits, vegetables, whole grains, as well as foods that contain live cultures or are fermented, such as yogurt, buttermilk, kefir and sauerkraut • Speak with your physician/ healthcare provider or registered dietitian nutritionist regarding worsening/ appearing symptoms

continued on next page

BHN Fact Sheet: **Stress Management**

continued

Potential Side Effect of Chronic Stress	Potential Impact on Nutrition	Nutrition Tips
Headaches, sleeplessness, fatigue, nausea, muscle and joint aches, tension and changes in appetite Decrease in antioxidants which help reduce harmful chemical reactions that take place in the body. Eating a diet high in simple sugars such as sweets and sugared beverages which lead to loss of minerals such as such as chromium and magnesium which help with relaxation Increase in intake of caffeine or alcohol– to help alleviate mood changes due to anxiety or other side effects Changes in mood that may impact eating habits	Changes in intake including excessive or inadequate intake of protein, carbohydrate, fat, vitamins, and minerals Choosing more non-nutrient dense foods– decreases intake of vitamins and minerals Use of caffeine and alcohol may impact quality of intake and hunger/ fullness signals	• Choose nutrient dense foods including lean meats/ meat alternatives, whole grains, fruits, vegetables, and healthy fats • Eat regular meals and snacks to ensure adequate intake and promote stable blood sugar levels • Include foods high in antioxidants including fruits and vegetables • Avoid "empty calorie" foods that are high in sugar content and low in nutrients • Keep healthy options readily available and in plain view during times of stress • Limit caffeine intake to less than 400mg per day • Limit alcohol intake to less than 2 oz for men and 1 oz for women daily • Speak with your physician or registered dietitian about taking a multivitamin • Drink enough fluids with a focus on water

Additional Tools and Resources:

Mayo Clinic: http://www.mayoclinic.org/healthy-lifestyle/stress-management/basics/stress-basics/hlv-20049495

National Institute of Health: https://www.nlm.nih.gov/medlineplus/stress.html

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This fact sheet does not take the place of medical advice. Please see a medical doctor or registered dietitian for recommendations

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