

Course

Health Science

Unit VIII

Strategies for
the Prevention
of Diseases

**Essential
Question**

Why is it
important to
evaluate pain
levels in patients
you are working
with?

TEKS

130.204
1(B)(C), (5)(A)(B)
8(D), (9)(D).

**Prior Student
Learning**

Personal
experience in
dealing with
pain.

Estimated time

3 Hours

Teacher Note

Use of a TENS
unit can be
demonstrated to
the class.

Rationale

Understanding how pain is produced and perceived is essential to finding mechanisms for pain relief.

Objectives

Upon completion of this lesson, the student will be able to

- Recognize the types of pain and how pain is transmitted; and
- Examine the various techniques used for pain relief.

Engage

Have students talk about the last time they were in pain and how it felt. Discuss what they would have liked someone to do about it.

Key Points

- I. Pain is an unpleasant sensation, usually associated with disease or injury.
 - A. Transmission
 1. Stimulation of neurons (pain receptors)
 2. Neurotransmitters
 - a. Substance P
 - b. Prostaglandin
 3. Brain – the impulse goes to the thalamus, cortex, and limbic system, where it is processed.
 - B. Pain Perception – the conscious experience of discomfort
 1. Gate Control Theory – only one impulse is transmitted at a time.
 2. Endogenous Opioids
- II. Types of Pain
 - A. Cutaneous Pain – discomfort that originates at the skin level.
Example: burns
 - B. Visceral Pain – discomfort arising from the internal organs
 - C. Neuropathic Pain – neuropathic pain is a complex, chronic pain state that is usually accompanied by tissue injury. With neuropathic pain, the nerve fibers themselves may be damaged, dysfunctional, or injured. These damaged nerve fibers send incorrect signals to other pain centers. The impact of nerve fiber injury includes a change in nerve function, both at the site of the injury and the areas around the injury. One example of neuropathic pain is called Phantom Limb Syndrome.
 - D. Acute Pain – acute pain begins suddenly and is usually sharp. It serves as a warning of disease or a threat to the body.
 - E. Chronic Pain – chronic pain persists, despite the fact that an injury has healed. Pain signals remain active in the nervous system for weeks, months, or years. Physical effects include tense muscles, limited mobility, lack of energy, and changes in appetite. Emotional

effects include depression, anger, anxiety, and fear of re-injury. Such a fear may hinder a person's ability to return to normal work or leisure activities.

- F. Referred Pain – discomfort perceived away from the site of stimulation. There are networks of nerves which can conduct pain sensations from the actual site of pain to a more distant location.
- G. Phantom pain – deep pain in tissues that have been surgically removed (amputations).

III. Pain Management

A. Drug Therapy

1. Opioids – commonly prescribed because of their effective analgesic, or pain-relieving, properties. Medications that fall within this class (referred to as prescription narcotics) include morphine (e.g., Kadian, Avinza), codeine, oxycodone (e.g., OxyContin, Percodan, Percocet), and related drugs.
2. Nonopioids – often effective for mild to moderate pain. People do not become physically dependent on these drugs or tolerant of their pain-relieving effects. Aspirin and acetaminophen are available without a prescription (over-the-counter, or OTC).
3. Placebos – a placebo effect occurs when a treatment or medication with no therapeutic value is administered to a patient, and the patient's symptoms improve. The patient believes and expects that the treatment is going to work; therefore, it does.

B. Surgical Approaches

C. Nondrug/nonsurgical interventions

1. Imagery
2. Meditation
3. Distraction/Hypnosis
4. Relaxation
5. Thermal Applications
6. Transcutaneous Electrical Nerve Stimulation
7. Acupuncture
8. Acupressure – uses pressure to relieve pain
9. Biofeedback – biofeedback is a method that uses the mind to control a bodily function that the body normally regulates automatically, such as skin temperature, muscle tension, heart rate, or blood pressure.

IV. Pain rating scales

- A. Horizontal numerical rating
- B. Wong-Baker faces scale

Activity

- I. Practice **Pain Management Relaxation Techniques.**

- II. Assess the Case Studies to determine the appropriate response to pain on the Scales – remember cultural and age factors are part of the report of pain.

Assessment
Pain Management Quiz

Materials

Textbook, Fundamental Skills and Concepts in Patient Care, by Barbara Timby

TENS Unit (borrow from Physical Therapy)

Relaxation tape

Key: Pain Management Quiz

<http://www.webmd.com>

<http://www.nida.nih.gov>

<http://www.merck.com>

Accommodations for Learning Differences

For reinforcement, the student will recall a personal experience involving pain. Describe the factors that intensified the pain and the measures, other than medication, which relieved it. Discuss how this information can be applied to restoring comfort among patients who are in pain.

For enrichment, the student will design a brochure on pain management for a client undergoing cancer treatment.

National and State Education Standards

National Health Science Cluster Standards

HLC02.01 Communications

Health care workers will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.

TEKS

130.204 (c) (1)(B) communicate using medical terminology;

130.204 (c) (1)(C) express ideas in writing and develop skills in documentation;

130.204 (c) (5)(A) describe document formats;

130.204 (c) (5)(B) compile and record data according to regulatory agency policy;

130.204 (c) (8)(D) employ medical vocabulary specific to the health-care setting; and

130.204 (c) (9)(D) perform within the designated scope of practice.

Texas College and Career Readiness Standards

English Language Arts

I. A. 2. Generate ideas and gather information relevant to the topic and purpose, keeping careful records of outside sources.

II. A. 4. Draw and support complex inferences from text to summarize, draw conclusions, and distinguish facts from simple assertions and opinions.

Pain Management Relaxation Techniques

Relaxation techniques can be a useful way to help yourself feel better when you are depressed, stressed out, or in pain.

****Use these relaxation techniques as a group activity for the entire class. Dim the lights, play soft relaxing music, and slowly talk them through the steps. After the initial giggling dies down, they really get into this activity!***

Mental Imagery Relaxation

1. As you focus on your mental image more and more, you direct your attention away from anxiety provoking situations.
2. Close your eyes.
3. Breathe deeply and slowly.
4. Think of a place where you feel entirely safe and comfortable. Your place should be real, such as a childhood tree fort or a waterfall you once visited. It could be imagined, like a lush deserted island or in a castle high above the clouds.
5. What does that place look like? What sorts of things are in your special place?
6. What does that place sound like?
7. Breathe deeply.
8. Does your place have a particular smell? Imagine that smell.
9. What does your place feel like? What is the temperature? Is it sunny or dark?
10. Humid or dry?
11. Your special place will always be somewhere you can go whenever you are scared or sad. You can also go there to simply relax.

Physical Relaxation

By learning to relax your body, you can concentrate on feeling well and deal with unpleasant emotions and experiences.

1. Sit or lay comfortably.
2. Close your eyes.
3. Breathe slowly and deeply
4. Concentrate on feeling the air move in and out of your body
5. Concentrate on your toes. Relax them. Feel all the tension leave your toes, one by one.
6. Feel yourself breathe slowly and deeply.
7. Relax your feet. Let all the tension in your feet disappear.
8. Now the tension in your calves disappears.
9. You are breathing deeply.
10. A soothing feeling rises through your legs, through your knees to your thighs.
11. Your legs are completely relaxed and free of tension.
12. Breathe deeply. Feel the air glide through you.
13. The muscles grow free of tension.
14. The muscles in your belly relax now.
15. Feel yourself breathing deeply as the tension in the lower half of your body disappears.

16. Now the tension in your back begins to disappear, starting from the bottom and working upwards.
17. The soothing feeling wraps around your chest and neck, and extends down your arms.
18. All tension leaves your arms and hands. You feel very relaxed now.
19. All the while you are breathing deeply.
20. All the muscles in your neck relax.
21. Then the soothing feeling moves through your face.
22. All of your facial muscles relax as you breathe deeply and feel the tension disappear from your body.
23. You are now completely relaxed. Your body and mind feel free and without tension.
24. All of the bad feelings are gone.

Case Studies for Evaluation

Determine how a patient might describe pain using the numerical scale or the Wong-Baker FACES charts, depending on the following descriptions of patient conditions:

1. A nineteen-year-old male was presented by ambulance in the emergency department. He was the driver of a car involved in a moving vehicle accident (MVA). He says his chest hit the steering wheel. He is alert and complains of sharp pain when he moves and breathes. His vital signs are BP – 90/60, P – 130 (regular), and R 30 (shallow and irregular). There were empty beer cans found in the car. How do you think he would respond to his level of pain on one of the scales? Justify your answer.
2. A ten-year-old boy was riding his bicycle, racing with his friends, when he hit a patch of gravel and lost control of his bicycle. He was thrown from the bike and slid about five feet to a stop. Because he was wearing shorts, both his knees and his palms are abraded and bleeding. His elderly neighbor lady saw the accident and called 911. When the ambulance arrived, how do you think he responded to the questions about severity of his pain? Use the scales to show your response. Justify your answer.
3. A twenty-five-year-old housewife started the evening meal for her family at about 5 o'clock. As she was heating the skillet of grease for frying, the telephone rang. While she was talking, she smelled the grease getting hot, so she grabbed the skillet just as it burst into flame. She ran from the kitchen to the yard, blowing hot grease and flame onto her face, arms, and hands. How do you think she responded to questions about her pain? Justify your answer. How should she have managed the skillet of hot grease?
4. A seventy-year-old grandmother has been told that she has metastasized breast cancer and that there is no cure. On the advice of her doctor, she and the family called Hospice to assist with her care. The hospice nurses supplied the family with a pain scale and helped to make a plan to manage the end-of-life pain symptoms she would experience. The patient told her nurse that she hurt "all the time." How would she be likely to rate her pain? Justify your answer.
5. A twenty-year-old swimmer dove into shallow water and was pulled from the water by friends. They called 911. The patient was transported to the hospital where examination showed that there was no movement or sensation below the clavicles. The patient was grimacing, alert, and responsive. What pain level might this patient report? Justify your answer.

Pain Management Quiz

1. _____ Cutaneous
2. _____ Visceral
3. _____ Neuropathic
4. _____ Referred
5. _____ Phantom
 - a. Discomfort that originates at the skin level. Example (burns)
 - b. Deep pain in tissues that have been surgically removed. (Amputations)
 - c. Discomfort arising from internal organs
 - d. Discomfort perceived away from the site of stimulation
 - e. Pain with atypical characteristics occurring days, weeks, or months after source is treated

6. Which of the following descriptions best defines the gate-control theory?
 - a. The strongest impulse is transmitted
 - b. The weakest impulse is transmitted
 - c. All stimuli are transmitted
 - d. Only one impulse is transmitted at a time

7. Mary Dolan, age 50, has gallbladder disease. She is complaining of right shoulder pain. What type of pain is she experiencing?
 - a. Somatic
 - b. Cutaneous
 - c. Referred
 - d. Neuropathic

8. Which pain management technique uses pressure to relieve pain?
 - a. Acupuncture
 - b. Acupressure
 - c. Biofeedback
 - d. TENS

9. Which of the following signs is a characteristic of chronic pain?
 - a. Hypertension
 - b. Tachycardia
 - c. Anxiety
 - d. Depression

10. Which of the following statements most accurately describes a characteristic of pain?
 - a. Pain is objective in nature.
 - b. Responses to pain vary widely.
 - c. Pain is always associated with bodily damage.
 - d. Pain is not a demanding situation.

11. Biofeedback is best described as
- A training program that helps the individual by substituting for his drug therapy
 - A training program that produces a subconscious condition used to control pain
 - A training program that helps the individual become aware of certain bodily changes
 - A program used to produce simple pressure on various body parts to reduce pain
12. A patient's discomfort is most likely relieved by a placebo in which of the following situations
- Discomfort is only mild
 - Discomfort is imagined or anticipated
 - The patient is almost recovered
 - The patient is confident in his caregivers
13. The conscious experience of discomfort is called
- Pain tolerance
 - Pain perception
 - Pain threshold
 - Suffering

Pain Management Quiz Key

1. A
2. C
3. E
4. D
5. B
6. D
7. C
8. B
9. D
10. B
11. C
12. D
13. B