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Why study “Pain”?

Legal/Ethical Responsibilities

- Nurse Practice Act 1997 states that
  - The RN that provides direct and indirect patient care services should ensure the comfort of the patients.
  - Management of patient’s pain is a nursing function incorporated within the RN’s role as a patient advocate.

(California BRN, 2007)

Legal/Ethical Responsibilities, *cont.*

- BRN adopted a pain management policy for RN practice and pain management curriculum guidelines for nursing programs
  - Health care facilities to educate staff on pain management
  - Nursing programs to integrate pain as a 5th vital sign into their curriculum

(California BRN, 2007)

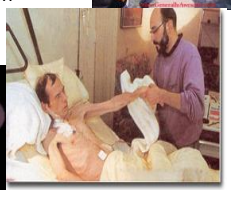
JCAHO Pain Standards

- Patients are involved in all aspects of their care.
- Patients have the right to appropriate assessment and management of pain.
- Pain is assessed in all patients.
- Policies and procedures support safe medication prescription or ordering.
- Patients are educated about pain and managing pain as part of treatment as appropriate.

(JCAHO, 2014).

Ethico-legal Issues

- Fear of hastening death by administering narcotics
- Physician-assisted suicide, Euthanasia
  - "End of Life Option Act" in California
- Use of placebos



Pain is…

- 1968, McCaffery
  - Whatever the person experiencing the pain says it is, existing whenever the person says it does
  - Subjective experience with no objective measures
  - Patient's self report is the most reliable indicator of pain

(NPC, 2001)

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Pain is…

- 1979, International Association for the Study of Pain (IASP)
  - Unpleasant sensory & emotional experience associated with actual or potential tissue damage
  - Complex experience that includes multiple dimensions

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Neurophysiological Basis of Pain

1.Transduction

- Conversion of a stimulus into a neuronal action potential
- Occurs at the peripheral nerves, i.e. nerve endings called **nociceptors**
- Stimuli or tissue damage causes the release of biochemical mediators, e.g. prostaglandins, bradykinin, serotonin, histamine, etc.
- Inflammatory response to cell injury

Neurophysiological Basis of Pain, *cont.*

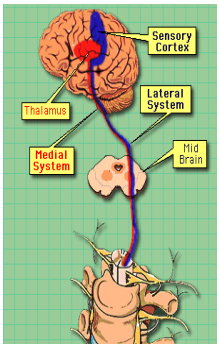
2. Transmission

- Movement of pain impulses from the site of transduction to the brain

Three segments involved in transmission

1. Transmission along nociceptor fibers to the spinal cord

Three segments involved in transmission, *cont.*



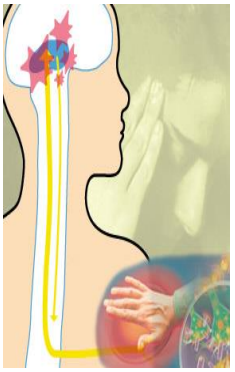
2 Types of peripheral nerve fibers:

A-delta fiber: results in pain that is pricking, sharp, short duration

C fiber – dull, aching, burning pain, slow onset, long duration

2. Dorsal horn processing
   - Release of neurotransmitters
3. Transmission to thalamus & cortex

Neurophysiological Basis of Pain, *cont.*



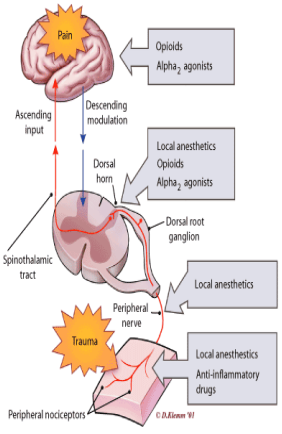
3. Perception

- Pain is recognized, defined, & responded to by the individual experiencing the pain.
- Occurs in cortical structures – cerebral cortex
  - Construction of the meaning of pain
- Consider behavioral strategies: distraction, relaxation, imagery

Neurophysiological Basis of Pain, *cont.*

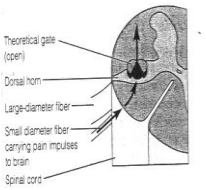
4. Modulation

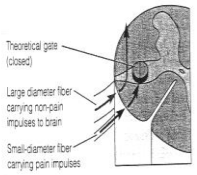
- Activation of descending pathways that exert inhibitory or facilitatory effects on the transmission of pain
- Descending modulatory fibers release chemicals, e.g. serotonin, norepinephrine, endogenous opioids
  - Can inhibit pain transmission



Modulation, *cont.*

- Modulation of pain can occur at the level of periphery, spinal cord, brainstem, & cerebral cortex
- Pain meds working on the modulatory systems





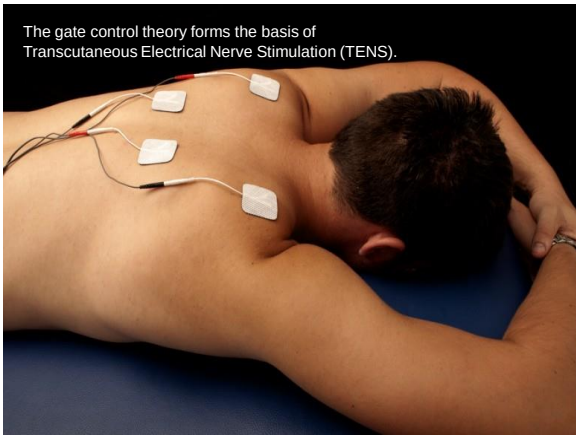
Gate Control Theory

1965, according to Melzack & Wall

- Peripheral nerve fibers carrying pain to the spinal cord can have their input modified at the spinal cord level before transmission to the brain.
- Gate mechanism is located in the dorsal horn of the spinal cord.
  - Large & small-diameter fibers
- <u>Limited amount of sensory information can reach the brain at a given time.</u>

Gate Control Theory, *cont.*

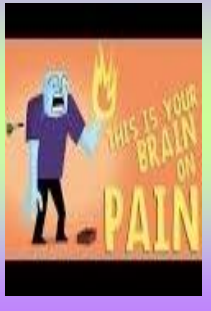
- Significance of heat & pressure as pain intervention.
  - Stimulation of large nerve fiber by interventions can cause the gate to close & inhibit transmission of pain stimuli
- Gate Control theory is not unanimously accepted.

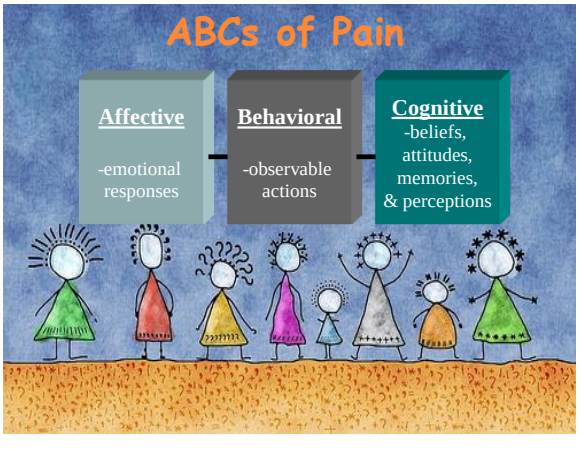


What are the effects of pain?

Body Systems

- Cardiovascular
- Respiratory
- Neurological
- Gastrointestinal
- Genitourinary
- Musculoskeletal
- Immune





Types of Pain

Duration

- *Acute*
  - Sudden or slow onset regardless of intensity
  - Expected to last only through a certain period of time
- *Chronic*
  - Prolong, persisting over 3 months

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Types of Pain, *cont.*

Location

- *Cutaneous*
  - Originates in the skin & subcutaneous tissue
- *Deep somatic*
  - Arises from ligaments, tendons, bones, blood vessels, & nerves
- *Visceral*
  - Arises from visceral organs, i.e. GI tract, bladder, etc.

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Types of Pain, *cont.*

Location

- *Radiating*
  - Perceived at the source of pain & extends to nearby tissues
- *Referred*
  - Pain felt in a part of the body that is considerably removed from the tissues causing the pain

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Types of Pain, *cont.*

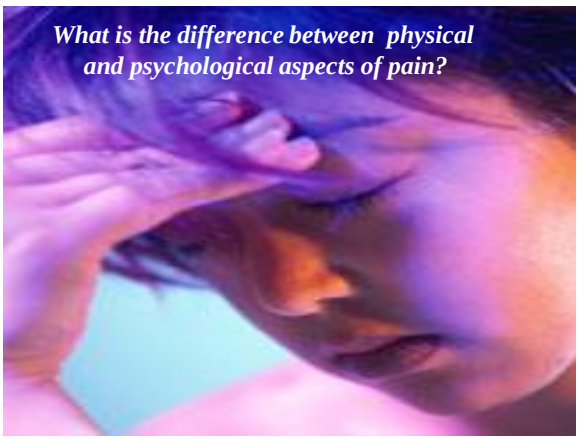
Etiology

- *Intractable*
  - Highly resistant to treatment
  - Difficult to manage with standard interventions, e.g. advanced cancer, fibromyalgia, depression, etc.
- *Phantom (Deafferentation)*
  - Painful sensation perceived in a body part that is missing, e.g. amputation

Types of Pain, *cont.*

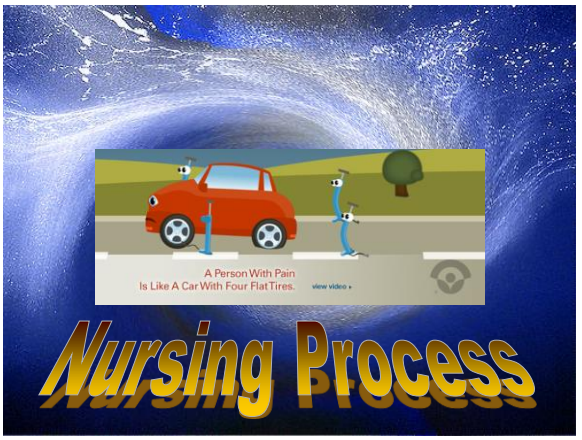
Etiology

- *Neuropathic*
  - Result of current or past damage to the peripheral or CNS, e.g. tissue or nerve damage
  - Long lasting, burning, dull, aching, sharp, "shooting pain"
- *Nociceptive*
  - Cause by damage to somatic or visceral tissue
  - Aching, throbbing, well localized
- **Refer to Lewis, 2014, p.118**



How does pain differ?

Physiological	Psychological
• Transmission of noxious stimuli to neuropathways • Types of pain – Nociceptive – Neuropathic – Other classifications/types • Manifestations	• Affective • "Cognitive-related" • Attitudes • Experiences • Perceptions • May have the same manifestations as physiological



Assessment

Subjective

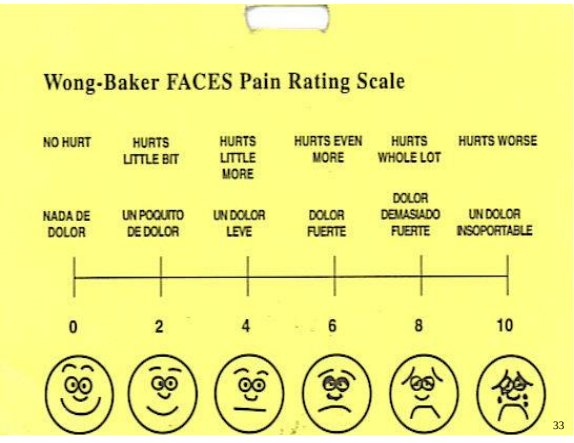
- Personal
- Mnemonics
  - OLDCART

Objective

- Parameters, e.g. Vital signs
- Direct observation of clients behavior

FLACC Scale: Face, Legs, Activity, Cry, Consolability

Face	0 No particular expression or smile	1 Occasional grimace or frown, withdrawn, disinterested	2 Frequent to constant frown, clenched jaw, quivering chin
Legs	0 Normal position or relaxed	1 Uneasy, restless, tense	2 Kicking or legs drawn up
Activity	0 Lying quietly, normal position, moves easily	1 Squirming, shifting back/forth, tense	2 Arched, rigid, or jerking
Cry	0 No cry (awake or asleep)	1 Moans or whimpers Occasional complaint	2 Crying steadily Screams or sobs Frequent complaints
Consolability	0 Content Relaxed	1 Reassured by occasional touching, hugging, or "talking to" Distractible	2 Difficult to console or comfort



Nursing Diagnoses

- Acute pain
- Chronic pain
- Ineffective airway clearance
- Activity intolerance
- Hopelessness
- Anxiety
- Fear
- Powerlessness
- Self-care deficit
- Impaired physical mobility
- Disturbed sleep pattern
- Risk for self-mutilation
- Social isolation

• Refer to Nursing Diagnosis Handbook for details on nursing care plan

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Independent Nursing Interventions

- Therapeutic communication
- Comfort measures
- Breathing exercises
- Relaxation techniques
- Guided imagery
- Anticipatory guidance
- Distraction
- “Back rub”

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Collaborative Interventions

Pharmacological Management
- WHO Three-Step Ladder Approach

- Types of medications
  - Non-opioids - analgesics
  - Opioids - narcotics
  - Adjuvant - “coanalgesics” by enhancing pain treatment

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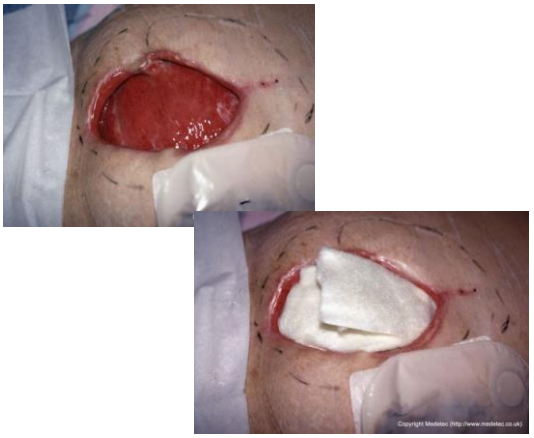
Evaluation

- Review the outcome

Goal	Plan
□ met	□ continue
□ partially	□ revise
□ not met	□ discontinue

Titration of Drugs

- Adjustment of dosage of medication to obtain efficacy (i.e. pain relief) with the least side effects
- "Breakthrough" pain medications



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Preemptive Analgesia

- **Administration of pain medications prior to painful procedures**
- **Consider the time & onset of medication**

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Use of placebos

- Any medication or procedure, including surgery, that produces an effect in a client because of its implicit or explicit intent & not because of its specific physical or chemical properties (McCaffery & Pasero, 1999)

A Dreamy World

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What are the pharmacologic pain interventions that are currently recommended?

WHO Analgesic Ladder

Step 3
Opioids for moderate or severe pain, e.g. morphine
Pain persists or increases
Replace Step 2 with Step 3
Continue Step I drugs & adjuvant drugs PRN

Step 2
Opioids for mild to moderate pain, e.g. codeine, oxycodone
Pain persists or increases
Add step 2 opioid; continue Step 1 + Adjuvant drugs PRN

Step 1
Non opioids for mild pain, e.g. Tylenol, ASA, NSAIDs
Pain
Provide appropriate & concurrent treatment for cause of pain
Use adjuvant drugs PRN

(WHO, 2007)

Non Opioids

- Non narcotic medications which inhibit the chemicals that activate the PAN (peripheral afferent nociceptor).

Examples:

- Acetaminophen (Tylenol) – analgesic & antipyretic effect
- NSAIDs (e.g. Aspirin, Ibuprofen, Ketorolac, Celebrex) – analgesic, antipyretic & anti-inflammatory effects

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Benefits of NSAIDs

- Potent analgesia for inflammatory & bone pain
- Analgesic effects are potentiated when used with other agents (e.g. opioids)
- Allows reduction of doses of other analgesics when used in combination

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Side Effects of Non Opioids

- Acetaminophen: hepatotoxicity
  - Dose exceeded 4000 mg/day
- Aspirin: bleeding and gastric upset
- NSAIDs: upper GI bleeding
- 2 most common side effects for non-opioids
  - Bleeding & GI disturbances

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Opioids

- Classification of medications which bind to the opioid receptor sites within the nervous system, blocking the transmission of pain.
- Examples:
  - Morphine SO4
  - Hydromorphone (Dilaudid)
  - Methadone (Dolophine)
  - Codeine (Tylenol#3)
  - Oxycodone (Oxycontin)
  - Hydrocodone (Vicodin & Norco)
  - Fentanyl (Duragesic)
  - Meperidine HCl (Demerol)

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Side Effects of Opioids

Acute - opioid naïve patient	Chronic - opioid tolerant patient
•N/V • sedation • respiratory depression • pruritus • urinary retention • constipation	•constipation • N/V • myoclonus (high doses) - specific for Demerol • urinary retention

Naloxone (Narcan) - antidote

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Treatment for Side Effects of Opioids

- Treatment depends on the side effects
  - N/V
  - Constipation
  - Pruritus
  - Gastric upset
  - GI Bleeding
  - Respiratory depression

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Adjuvant Analgesic

- Drugs that have a primary indication or use other than for pain relief, but have analgesics effect in some painful conditions.
- "Coanalgesics" – enhance pain tx
- Adjuncts are used at every step in the WHO analgesic ladder

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Adjuvant Analgesic, cont.

Types

- Antidepressants: amitriptyline (Elavil)
- Anticonvulsant: carbamazepine (Tegretol), gabapentin (Neurontin), valproic acid (Depakote)
- Systemic & local anesthetics: EMLA cream (lidocaine + prilocaine)
- Muscle relaxants: baclofen (Lioresal)

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Routes of Administration

- **Oral**
  - preferred route of delivery; easiest to use; takes 30 mins to be absorbed
- **Sublingual and Transmucosal**
  - directly absorbed into systemic circulation
- **Intranasal**
  - rapid action due to direct absorption
- **Rectal**
  - indicated for patients with dysphagia, N/V

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Routes of Administration, cont.

- **Transdermal**
  - non invasive; apply to non-hairy skin
  - Do not apply on "bony" areas
- **Parenteral**
  - Subcutaneous – used extensively to deliver opioids; absorption is slower compared to IV
  - Intramuscular –least desirable route
  - Intravenous – rapid & effective relief with few side effects

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Routes of Administration, cont.

- **PCA – Patient Controlled Analgesia**
  - Demand analgesia
  - Interactive method of pain management that permits patients to treat their pain by self-administering doses of pain medication

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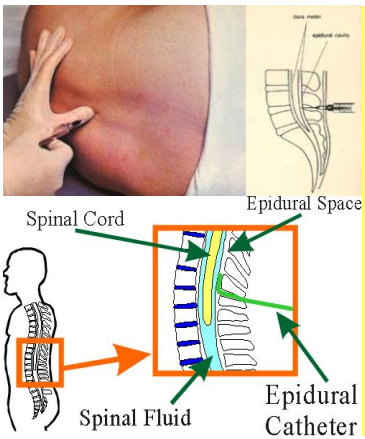
PCA

Routes of Administration, cont.

- **Intraspinal/intrathecal/epidural**
  - involves inserting a catheter into the subarachnoid space or epidural space to infuse opiates.



Epidural

Nursing Responsibilities

- Know the MEDICATION
- Know the 8 Rights
- Know the onset, peak, & duration
- Know when to go back to the patient & follow up results of pain medication
- Teach the patient & family:
  - Do not wait until the pain becomes severe to take pain medications
  - Side effects of pain medications
  - Report when pain is not relieved

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Collaborative Intervention

Physical Therapy

- TENS (Transcutaneous Electrical Nerve Stimulation)
- Heat – application of moist or dry heat to the body.
  - Heating pad; “Burn precaution”
  - Use for decubiti, superficial boils, thrombophlebitis

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Collaborative Intervention, *cont.*

- Cold – application of moist or dry cold to the body
  - Cooling mattress
  - Use for acute trauma, bleeding, swelling

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Collaborative Intervention, *cont.*

Occupational therapist

- Assist patients on doing ADLs
  - Music - Relaxation technique
    - slow rhythmic deep breathing
  - Recreation – Distraction
    - Watching TV, playing a “game,” conversing, imagery

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Collaborative Intervention, *cont.*

Psychologist

- Psychotherapy
- Cognitive tx, e.g. Hypnosis
- Biofeedback

Medical Social Worker

- Emotional, familial concerns

Spiritual counselor

- Respect pt.’s religious preference
- Call chaplain or their own parish priest or “pastor”

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What are the most important & recent innovations in pain management?

- Neural blockades
- Use of gabapentin
- New research on genetics of pain management
  - Phenomenon known as “opioid polymorphism”

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Alternative Medicine

- Acupuncture
  - A method of producing analgesia or altering function of a system of the body by inserting fine, wire-thin needles into the skin to the specific sites on the body along a series of lines or channels, called meridians.
- Acupressure
  - A therapeutic technique of applying digital pressure in a specified way on designated points on the body to relieve pain.

Barriers to Effective Pain Management

- Tolerance
  - Need for an increased opioid dose to maintain the same degree of analgesia
- Dependence
  - Expected physiologic response to ongoing exposure to narcotic meds
  - Withdrawal syndrome when drug is abruptly decreased or stopped

Barriers to Effective Pain Management, *cont.*

- Addiction
  - Neurobiologic condition
  - Psychological drive to obtain & take substances for other than the prescribed therapeutic value

Methods to Evaluate Effectiveness of Pain Intervention

- Wong-Baker Scale
- FLACC Scale
- Observation of behavioral responses
- Parameters, i.e. vital signs

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Pain in Elderly

- Community-dwelling older adults, nursing home elderly
  - Suffer chronic pain
- Usually caused by musculoskeletal disorders
- Pain in the elderly is often inadequately assessed & treated

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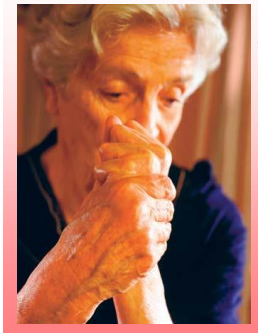
Barriers to Pain Assessment



- Belief that pain is normal & part of aging
- Fear of being a "burden"
- Cognitive & sensory-perceptual deficit to process information & communicate
- Difficulty using the pain scales

Elderly in Pain

- Nursing considerations unique to the elderly
  - Aging & effects of chronic diseases
  - "Pain as a constant companion"
- Outcomes of chronic pain
  - Depression
  - Sleep disturbance
  - Decreased mobility
  - Social dysfunction

Treatment of Pain

- Older adults metabolize drugs slowly
  - Prone to higher blood levels
  - Toxicity
- NSAIDs frequently cause GI bleeding
- Opioids cause constipation leading to bowel obstruction
- Consider non pharmacological approach
  - Complimentary & alternative intervention
- Be sensitive to inadequate resources to obtain pain medications

Sociocultural Perspectives of Different Ethnic Groups

Anglo-European Americans
Hispanic Americans
Jewish Americans
Native Americans
African Americans
Asian Americans

Traditional Health Providers/Treatments for Pain

- Most traditional systems of medicine relate health and illness not only to natural causes but also to an individual's social and spiritual interactions.
- Be aware that some cultures believe different types of treatment.
  - Herbs, home remedies, "medicine man"
  - "Curanderos," "Faith healers," etc.

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Final Thoughts

Pain is not an enemy, but an important warning system on the body.

Pain tells us if something needs attention, but we normally ignore and try to mask it with medication.

Pain is trying to get our attention just like the oil light on the dashboard.

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Final Thoughts, *cont.*

From a biomedical standpoint, we tackle the tissue source of pain with medication or surgery.

From a psychological standpoint, a significant number of patients have related depression and anxiety.

From the social side, people with chronic pain may engage in bad behaviors that can make things worse.

Bottom line is, we need to find ways to treat the PERSON, not just the PAIN.