Unit XII: Sleep

ADN Program
N141
Napa Valley College

Objective #1: Describe stages of normal sleep cycle

Sleep

- A cyclical physiological process
- Influences physiological function & behavior
- Ill require more sleep & rest than healthy
- 50% suffer from sleeplessness at some point in their lives
- Quality sleep important in the recovery of ill
- Hospital settings & the activities of its personnel make getting quality sleep difficult
- Nurse needs to understand the nature of sleep, factors influencing it, & the clients’ sleep habits

Non-Rapid Eye Movement

- NREM
  - 75-80% of sleep
  - Brain activity ↓
  - Blood pressure ↓
  - Respiration ↓
  - Heart rate ↓
- Has four stages:
  1: Drowsy transition from waking to sleeping
  2: Intermediate sleep, arousal more difficult
  3: Beginning of “deep” or slow-wave sleep
  4: Deepest sleep, little contact with external sensations
Stage 1 NREM

- Lightest level of sleep
- Lasts only a few minutes
- Gradual fall in vital signs
- Easily aroused by sensory stimuli such as noise
- If awakened, feel like daydreaming has occurred

Stage 2 NREM

- Period of sound sleep
- Relaxation progresses—arousal easy
- Lasts 10 to 20 minutes
- Body functions continue to slow

Stage 3 NREM

- 15 to 30 minutes
- Initial stages of deep sleep
- Arousal more difficult
- Muscles completely relaxed
- Vital signs decreased but regular
Stage 4 NREM

- Deepest stage of sleep
- Very difficult to arouse
- Vital signs significantly < awake
- 15 to 30 minutes
- Sleepwalking and enuresis (bed-wetting) occur here

Rapid Eye Movement
REM

- High level of autonomic activity
  - Rapidly moving eyes
  - Fluctuating heart, respirations, & BP
- Vivid, full-colored dreaming
- Begins ~90 minutes after sleep begun
- Muscles relax, tone lost, reflexes absent
- Gastric secretions ↑
- Very difficult to arouse the sleeper
- REM lasts from 5-30 minutes & ↑ with each cycle

The Sleep Cycle
Objective #2 Compare the sleep requirements for different age groups.

Sleep Across the Lifespan

- Neonates (birth - 1 month)
  - Sleeps ~ 16-20 hours a day
  - Awakens in response to hunger, pain, cold or other stimuli
  - ~50% in REM

- Infants (1 month - 1 year)
  - Sleeps ~ 15 hours a day
  - After 3 months, sleeping 8-10 hrs at night
  - May take several naps during the day
  - ~30% in REM

- Toddlers (1-3 years)
  - By age 2, children usually sleep through the night and take daily naps
  - Total averages 12 hours a day
  - Decrease in REM continues
  - Commonly wake during night

Sleep Across the Lifespan

- Children (3-16 years)
  - Preschool (3-5)
    - ~12 hours a night
    - By 5, preschooler rarely naps
  - School-aged (6-12)
    - 6-year-old averages 11-12 hours of sleep
    - 11-year-old sleeps about 9 to 10 hours
  - Adolescents (13-18)
    - Sleep needs ↑
    - Require more sleep than preadolescents for G & D
    - Yet, teens sleep ~ 7.5 hours per night
    - May start to c/o excessive daytime sleepiness (EDS)

Sleep Across the Lifespan

- Adults ~ 6-8.5 hrs of sleep
  - Young adult
    - Stress of jobs, family relationships, school, & social activities may lead to insomnia
    - EDS contributes to ↑ accidents & ↓ productivity
  - Middle adult
    - Amount of stage 4 sleep ↓
    - Insomnia common due to stress, anxiety, depression, & menopausal symptoms
  - Older adult
    - Quality of sleep ↓
    - REM & stage 4 sleep ↓
    - Night waking common, harder to go back asleep
    - Naps common

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Objective 3: Factors Affecting Sleep

- Daily routines influence sleep patterns
  - Working alternating shifts
  - Going to bed at an unaccustomed time
  - Late night social activities
  - Changing evening mealtime
  - Children especially sensitive to changes in bedtime routine
- Illness: Pain, discomfort, or mood problems
- Meds: Sleepiness & sleep deprivation common side effects of many meds
  - Caffeine & alcohol r/t insomnia (al ↑ onset, but wake more often)

Factors Affecting Sleep

- **Pain:** Most disruptive factor to sleep
- Stress linked to:
  - Delay in falling asleep
  - Less deep stages
  - F & early awakening
- **Exercise**
  - Exercising ≥ 2-3 hrs before h.s. allows body to cool down and promotes relaxation
- **Environment**
  - Temperature, ventilation, “hospital noise” and bed size, firmness & position can negatively impact sleep quality

Circadian rhythm: Latin term "circa dies"(about a day)

Synchronized to environmental factors that are about 24 hours in length (Earth’s rotation)

Influence biological & behavioral functions

- Fluctuations of body temperature, HR,BP,Hormone secretion

Different people function best at different times

Biological clock- ea. Person has

Synchronizes the sleep cycle.

i.e., morning person prefers to go to bed early & performs best in the morning

Hospitals/schools do not adapt to individual’s sleep-wake cycle preference
Factors Affecting Sleep

• Nocturia
  • Need to urinate at night disrupts sleep
  • R/t excess fluids
  • Most common in older people, people with cardiac disease, diabetes, urethritis, and prostate disease

• Food intake
  • Eating a large, heavy and/or spicy meal at h.s.
  • Allergies to milk, corn, wheat, nuts, chocolate, eggs, seafood, food dyes & yeast produce insomnia

• Restless leg syndrome (RLS)
  • Often felt by older adults
  • Repeated, rhythmical movements of the feet and legs
  • "Itching" sensation deep in the muscles
  • Relief only from moving the legs. Linked to low levels of iron & arterial circulation problems

Objective #4: Explain effects of Sleep Deprivation

• Prolonged ↓ in the amount, quality, & consistency of sleep
• Not a true sleep disorder

Sleep Deprivation

Causes (for example) include:
  Illness (fever, difficulty breathing or pain)
  Emotional stress
  Medications
  Environmental (freq. nursing care)
  Shift work

Effects:
  Fatigue
  Decreased performance
  Anxiety
  Increased illness
  Disorientation
  Hallucinations
Sleep Deprivation

- REM/NREM sleep deprivation
  - Causes: Alcohol, barbiturates, morphine, demerol, shift work, jet lag, hospitalization (esp. ICU)
  - Signs/symptoms: Anxiety, disorientation, ↓ reasoning ability (judgment) & ability to concentrate, & marked fatigue
- REM sleep deprivation
  - Causes: Not having enough uninterrupted REM sleep
  - Signs/symptoms: Irritability, & ↑ sensitivity to pain; confusion & suspiciousness; emotional lability
- Outcome Planning
  - Pt. will report an ↑ in quantity (8 hrs.) & quality (7 on 0-10 scale) of sleep by 3rd day p admission

Nursing Dimensions
- Sleep Assessment
- Nursing Diagnoses
- Outcomes (Goals)
- Interventions
- Evaluation

Objective: Complete a sleep assessment that identifies methods to assist a pt with restorative sleep.

Sleep Assessment

- Assessment focused on:
  - Understanding client’s usual sleep patterns
  - Promoting sleep is a part of care
- Sleep History
  - Usual sleeping pattern
    - Sleeping - waking times?
    - Hours of undisturbed sleep?
    - Quality of satisfaction with sleep?
    - Time/Duration of naps?
  - Bedtime rituals
    - Food or drink
    - TV, reading, music,
    - Special positions (e.g., elevated on pillows)
Sleep Assessment

- Sleep medications
- Sleeping environment
  - Dark, quiet room
  - Cool or warm temperature
- Recent changes in sleep patterns or difficulty in sleeping

- Physical Exam
  - Facial Appearance
    - Darkened areas around the eye?
    - Puffy eyelids?
    - Glazed or dull-appearing eyes?
    - Limited facial expression?
  - Mental Status
    - Anxious?
    - Confused?
    - Disoriented?
    - Slow speech?

- Behaviors
  - Irritability?
  - Restlessness?
  - Inattentiveness?
  - Slumped posture?
  - Yawning?
  - Rubbing eyes?
  - Uncoordinated?
  - Weak

- Sleep diary

Nursing Diagnoses

- Sleep Deprivation
- Sleep Pattern Disturbance
Objective #7: Plan based on nursing Dx of sleep pattern disturbance

Sleep Pattern Disturbance

- **Overview**
  - Disruption in the quantity/quality of sleep causing discomfort or interference in lifestyle
- **Statements (AEB)**
  - “I have difficulty falling asleep.”
  - “I’m having difficulty staying asleep.”
- **Etiologies (r/t)**
  - Anxiety
  - Changes in sleep environment or rituals
  - Pain
  - Illness
  - Alcohol or drug dependency
- **Outcome:** Reports a sleeping pattern that provides sufficient energy for ADLs by.....

Sleep Interventions

- **Promote comfort**
  - ↓ unit noise and lighting, warm or cool
  - Freshen bed linen, offer back rub, warm shower
  - Encourage voiding before going to sleep
  - Give analgesics/sedatives 30 mins before h.s.
  - Provide extended periods of uninterrupted sleep
- **Control physiological disturbances**
  - Use of pillows or HOB ↑ if respiratory problems
  - Activities, including RT treatments, 30 mins. before h.s.
- **Pharmacological approaches**
  - “Sedatives”: Meds producing a calming/soothing effect
  - “Hypnotics”: Meds that induce sleep
  - Both foster entry into Stage 1 sleep

Outcome Criteria

- Pt falls asleep in 20-30 min
- Sleeps 5-6 hours without waking
- States feels rested
## Sleep Pharmacology

### Benzodiazepines

- **Actions:** \(↓\) CNS activity by attaching to benzodiazepine receptors
- **Flurazepam (Dalmane)**
- **Lorazepam (Ativan)**
- **Oxazepam (Serax)**

### Benzodiazepines

- **Alprazolam (Xanax)**
- **Clonazepam (Klonopin)**
- **Diazepam (Valium)**
- **Flurazepam (Dalmane)**
- **Lorazepam (Ativan)**
- **Oxazepam (Serax)**

### Indications
- Sedative: \(↓\) CNS activity
- Hypnotic: Induces sleep
- Anxiolytic: Decreases anxiety

### Controlled Substances
- Schedule IV
- Dependency & addiction can form

### Benzodiazepines

<table>
<thead>
<tr>
<th>Sedative-Hypnotic effect</th>
<th>Anxiolytic effect</th>
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<tbody>
<tr>
<td><strong>Flurazepam</strong> (Dalmane)</td>
<td><strong>Alprazolam</strong> (Xanax)</td>
</tr>
<tr>
<td>15-30mg PO qhs</td>
<td>0.25-0.5 PO bid/tid</td>
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<tr>
<td><strong>Temazepam</strong> (Restoril)</td>
<td><strong>Lorazepam</strong> (Ativan)</td>
</tr>
<tr>
<td>7.5-30mg PO qhs</td>
<td>0.5-2mg PO q6-8hr.</td>
</tr>
<tr>
<td><strong>Triazolam</strong> (Halcion)</td>
<td><strong>Oxazepam</strong> (Serax)</td>
</tr>
<tr>
<td>0.125-0.5mg PO qhs</td>
<td>10-30mg PO tid/qid</td>
</tr>
<tr>
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<td>Max: 4mg/day</td>
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<td>Max: 4mg/day</td>
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<td>Max: 120mg/day</td>
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</tbody>
</table>
Benzodiazepines

- **Onset**
  - 30” to 1hr. for p.o.
- **Duration**
  - 2 to 3 hrs.
- **Side Effects**
  - Drowsiness
  - Dizziness
  - Confusion
  - Slurred speech
  - Mild amnesia
  - Respiratory depression

Benzodiazepines

- Nursing Implications
  - Assess for side effects q shift
  - Assist with ambulation
  - HOB/siderails ↑ with call light in reach
  - If elderly or child, dosages should be the lowest effective dose
  - Advice to arise slowly from laying or sitting to standing to avoid dizziness
  - Prevent abrupt discontinuation 2º withdrawal symptoms
  - Avoid other CNS depressant drugs

Non-prescription Medicinal Rx

- Non-prescription
  - Benadryl, sleep-eze, sominex
  - Limit to less than 10 consecutive days
  - Tolerance develops
  - Daytime hangover
  - Dry mouth, blurred vision...
- Herbal
  - Melatonin, valerian, hops, aromatherapy
- Milk
  - Contains a chemical precursor of melatonin
- Turkey
  - Tryptophan
Further Reading

- National Sleep Foundation: www.sleepfoundation.org
  - Sleep quiz
  - Sleep diary
- Sleep Medicine: www.aasmnet.org

Study Guide

- Know the sequence of NREM and REM sleep cycle.
- Relate developmental stages to normative sleep pattern changes.
- Identify the components of sleep deprivation.
- Recognize causes of sleep disruption.
- Apply the nursing process to alterations in sleep.
- Familiarize yourself with sedative-hypnotic pharmacological applications and side effects.