Is Sleep the Fountain of Youth? Practical Information to Enhance Your Sleep

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OUTLINE:

• Discuss “normal” sleep
• Sleep critical for health
• How sleep changes with aging
• Common sleep disorders in older adults
• Opportunities to improve your sleep health
• Q & A
YOU SNOOZE, YOU LOSE.

Netflix’s biggest competition? Sleep, CEO says

--April 2017 USA Today headline

I’ll sleep when I’m dead.

--Warren Zevon (musician)

There will be sleeping enough in the grave.

--Benjamin Franklin
YOU SNOOZE, YOU LOSE.... YOUR HEALTH

Sleep is the best meditation.
-- Dalai Lama

A good laugh and a long sleep are the best cures in the doctor’s book.
-- Irish Proverb

I love sleep. My life has the tendency to fall apart when I’m awake, you know?
-- Ernest Hemingway
SLEEP: A CRITICAL PIECE OF HEALTH

• Humans spend about a third of their lives sleeping
• Sleep is a critical period of recovery that supports cardiovascular, neurologic, metabolic, and other life functions
• Quality sleep is beginning to be recognized as a positive health behavior
• Recommended to consider sleep as another vital sign (Reeve & Bailes, 2010)
TWO PROCESS MODEL OF SLEEP

Process C: circadian rhythm (suprachiasmatic nucleus)
Process S: sleep homeostasis (accumulation of sleep-promoting substances such as adenosine)
“NORMAL” SLEEP:

- 2 Phases
  - Rapid-eye movement (REM) sleep
  - Non-rapid-eye movement (NREM) sleep
    - Stage 1: transition from wakefulness to sleep
    - Stage 2: sleep spindles
    - Stage 3: slow wave sleep (SWS)
“NORMAL” SLEEP:

- Enter NREM sleep followed with REM sleep
- Phases alternate cyclically every 90-110 minutes through 4-6 cycles/night
- Ratio of NREM/REM sleep changes:
  - SWS prevalent in first half of night
  - Stage-2 and REM sleep prevalent in second half
SLEEP IMPACTS HEALTH:

- Proper function of body:
  - Immune function
  - Tissue healing
  - Pain modulation
  - Cardiovascular health
  - Cognitive function
  - Neuroplasticity
    - Learning and memory
  - Neuroprotection
    - Elimination of neurotoxic waste
  - Metabolic and endocrine functions
IMPACT OF SLEEP ON HEALTH:

• Chronic sleep loss associated with development of chronic conditions:
  » Depression and Anxiety
  » Diabetes
  » Obesity
  » Cardiovascular disease
  » Alzheimer’s Disease
  » Cancer?

• Associated with higher risk of mortality

• Opportunity for prevention!
SLEEP AND AGING:
SLEEP AND AGING

• Often with aging, there is an:
  » Increase in sleep latency
  » Increase in amount of time spent in NREM1
  » Reduction in SWS
  » Increase in sleep fragmentation
  » Increase in prevalence of sleep disorders

• Many sleep disturbance in older adults due to medical conditions and/or medications used to treat conditions

• Generally, need for sleep does not change
  » “Adults should sleep 7 or more hours per night on a regular basis to promote optimal health” (Watson et al. 2015)
COMMON SLEEP DISORDERS IN OLDER ADULTS:

1. Insomnia—difficulty falling asleep, maintaining sleep, or waking up too early at least 3 nights/week for past 3 months and impacts daytime functioning

2. Sleep Apnea—periods of pauses in breathing or shallow breathing
COMMON SLEEP DISORDERS IN OLDER ADULTS:

3. Restless Leg Syndrome (RLS) and Periodic Limb Movements during Sleep (PLMS)
   - RLS--persistent and overwhelming urge to move the legs while resting and typically presents with unpleasant sensations. Movement typically provides temporary relief
   - PLMS--clusters of repetitive leg jerks or kicks during sleep

4. Narcolepsy—overwhelming daytime sleepiness with frequent unintended falling asleep
SO WHAT DO I DO?

Process C: circadian rhythm (suprachiasmatic nucleus)
Process S: sleep homeostasis (accumulation of sleep-promoting substances such as adenosine)
SO WHAT DO I DO?

Spielman’s 3P Model of Insomnia

- Pre-Morbid
- Acute Insomnia
- Early Insomnia
- Chronic Insomnia

Likelihood of Sleep Disturbance

- Predisposing Factors
- Precipitating Factors
- Perpetuating Factors

Insomnia Threshold
PROMOTING SLEEP HEALTH:

Strengthen Circadian Process

• Wake up at the same time every day
  » Consider scheduling activities to increase regularity of schedule
  » If regular circadian rhythm, time to go to sleep in evening should be around the same time

~ Go to bed when sleepy enough to fall asleep easily

Siensukon, Aldughmi, Stevens. 2017. *PTJ*
Walker. 2017. *Why We Sleep*
PROMOTING SLEEP HEALTH:

Strengthen Circadian Process

• Exposure to bright natural light when you first wake up is also helpful to set your natural biological clock
  » UNLESS has shifted circadian rhythm (going to bed early/rising early)
    ~ Limit light exposure (wear sunglasses) in morning
    ~ Get bright-light exposure in late afternoon (outside ideally)
    ~ Discuss with physician prescription melatonin in evening to boost blunted circadian rhythm

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Walker. 2017. Why We Sleep
PROMOTING SLEEP HEALTH:

Increase Sleep Drive:

- Stimulus Control: use bed for only sleep and sexual activity to help train the brain that if you are in your bed, you should be sleeping
  - Do not eat, watch TV, talk on the phone in bed
  - Leave bed if unable to fall asleep within what feels like (do not watch clock) 15-20 minutes OR if begin to feel upset/anxious not asleep
    - Go to “cozy nest” and do mildly pleasant relaxing/distracting activity (ie. read or listen to book, listen to music, relaxation techniques)
    - Return to bed when sleepy
    - Repeat as needed

- Be mindful of fall risks and mobility limitations
  - Perform relaxation/distraction in bed
PROMOTING SLEEP HEALTH:

Increase Sleep Drive:

• Avoid daytime napping so that you are tired at night and can fall asleep easily
  » If you feel you need to take a nap, limit the nap to less than 30 minutes and avoid napping in the evening
  » Rest breaks during day may be helpful to reduce daytime fatigue but not disrupt nighttime sleep

~ Set timer if chance may fall asleep

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PROMOTING SLEEP HEALTH:

Increase Sleep Drive:

• Exercise regularly (preferably moderate to vigorous)
  » Talk to your physical therapist about an appropriate exercise program
  » Exercise has a moderate positive benefit on sleep characteristics by increasing slow wave sleep and total sleep time and decreasing sleep onset latency (Kubitz et al. 1996)
  » Older individuals who are less active, have higher physical function, and have poorer sleep quality appear to benefit the most from exercise to improve sleep (Buman et al. 2011)
PROMOTING SLEEP HEALTH:

- Avoid moderate to vigorous exercise at least 2-3 hours before bedtime. Exercising immediately before bedtime can be stimulating making it harder to fall asleep
  
  » Increased body temperature close to bedtime may interfere with the natural decline in body temperature that occurs in the evening and as sleep mechanisms are initiated (Kubitz et al. 1996; Driver and Taylor, 2000)

  » According to the 2013 Sleep in America poll, there were no differences in sleep outcomes between individuals who performed vigorous or moderate activity < 4 hours of bedtime and those who performed vigorous or moderate activity > 4 hours before bedtime (National Sleep Foundation, 2013)

  ~ Recommendation is “exercise is good, regardless of time of day.”
PROMOTING SLEEP HEALTH:

- Meditative movement, including tai chi, qi gong, and yoga, appears to improve sleep quality in a variety of populations (Wang et al. 2015; Du et al. 2015)
PROMOTING SLEEP HEALTH:

Decrease Pre-Sleep Arousal:

• Develop a relaxing bedtime routine
  » Find what works
  » Be consistent
  » Examples: Warm bath, reading a book, meditation, mindfulness, stretching, yoga, progressive muscle relaxation, deep breathing, mental imagery, gratitude journal, journal
PROMOTING SLEEP HEALTH:

Decrease Pre-Sleep Arousal:

- Daytime Relaxation techniques
  - Find what works
  - Practice, practice, practice!
  - Be consistent
  - Examples:
    - Deep breathing (5-7-8 breathing)
    - Mindfulness
    - Progressive muscle relaxation
    - Mental Imagery

- Journaling (to-do list, gratitude, process events from day, plan, etc)

- Referral to psychologist, counselor, or psychiatrist
  - Trauma
  - Depression, anxiety, mental health concerns

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PROMOTING SLEEP HEALTH:

Decrease Pre-Sleep Arousal:

• Avoid stimulating activities right before bedtime, including watching TV or discussing a stressful topic
• Get off screens 1-2 hours before bedtime
  » Blue light emitted from electronics disrupts melatonin production
  » Content can be stimulating
  » Time warp

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PROMOTING SLEEP HEALTH:

Decrease Pre-Sleep Arousal/Sleep Hygiene:

- Avoid caffeinated foods and drinks at least 4 hours before bedtime
  - Caffeine can cause difficulty falling asleep and increase the number of times you wake up during the night
  - Check drink or food labels (tea, coffee, chocolate, ice cream, soft drinks)
  - Some medications (weight-loss; pain relievers)
  - Half-life of 5-7 hours
  - De-caffeinated ≠ non-caffeinated (one cup decaf coffee contains 15-30% of caffeine as regular)
  - As age, takes longer for liver to remove caffeine

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PROMOTING SLEEP HEALTH:

Decrease Pre-Sleep Arousal/Sleep Hygiene:

- Refrain from drinking alcohol or smoking at least 3 to 4 hours before bedtime.
  - While alcohol may help with relaxation before bedtime, it can increase the number of times you wake up during the night and can cause you to wake up early.
  - Nicotine in cigarettes acts as a stimulant that can cause difficulty falling asleep.

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PROMOTING SLEEP HEALTH:

Sleep Hygiene:

• Avoid eating a large meal or spicy food 2-3 hours before going to bed
  » Your digestive system slows down while you are sleeping which can stimulate acid secretions that cause heart burn.
  » A light snack may be helpful if you are hungry.

• Avoid excessive liquid 2-3 hours before bedtime
  » Safety tips (also for stimulus control):
    1. Lamp within reach to switch on easily
    2. Dim or motion-activated night-lights in hallway and bathroom
    3. Remove obstacles or rugs
    4. Telephone nearby
PROMOTING SLEEP HEALTH:

Sleep Hygiene:

- Make sleeping environment comfortable and relaxing
  - Avoid too much light and disturbing noises
  - Use ear plugs, light-blocking curtains, or an eye mask if needed
  - Keep the temperature comfortable. Being too warm or cold may disturb your sleep
  - Use a comfortable and supportive pillow and mattress
PROMOTING SLEEP HEALTH:

• Avoid un-prescribed or over-the-counter sleep aids
• Talk to your doctor if continue to have trouble sleeping or suspect sleep disorder
  • Further assessment
  • Discuss if medications or other health conditions could be affecting sleep
  • Individualized treatment options
RELAXATION TECHNIQUES:

Free resources:

» Apps
» YouTube
Mindfulness Coach

Practice Now

RECOMMENDED FAVORITES ALL

Awareness of the Body
Awareness of the Breath
Awareness of the Senses
Building Compassion
Loving-Kindness Meditation
Mindful Eating
Mindful Listening
Mindful Looking
Mindful Walking

BREATHE RELAX

Exhale

Show Me How Breathe Setup
Results Learn About
Shorten Exhale Pause Lengthen Exhale
DISCUSSION/Q&A