

Sleep as Self-Care: What can caregivers do and how dyads can help each other get better sleep

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Disclosures

- I have no conflicts of interests to disclose.

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Objectives

- Define sleep
- Discuss the prevalence of sleep disturbances in African Americans
- Describe some changes observed with sleep due to age and cognitive impairment
- Discuss some ways to measure sleep so as to identify sleep problems
- Review some non-medication methods of managing sleep problems



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Robbins et al. (2021): Examining sleep deficiency and disturbance and their risk for incident dementia and all-cause mortality in older adults across 5 years in the United States

- Taking 30 minutes or longer to fall asleep and sleeping 5 hours or fewer per night had higher risk for incident dementia
- The risk of all-cause mortality was higher for those participants who reported difficulty maintaining alertness "some days" and "most/every day;" napping "some days" and "most/every day;" "poor/very poor" sleep quality, and sleeping 5 or fewer hours per night

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What is Sleep?

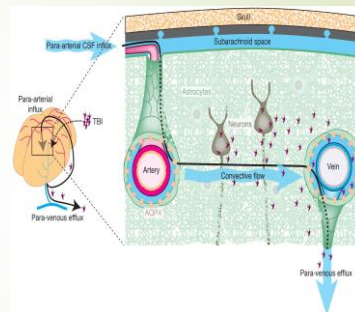
- ▶ A period of inactivity and restoration of mental and physical function which includes alternations between non-rapid eye movement (non-REM) and rapid eye movement (REM) sleep
- ▶ Functions
 - ▶ Integration of new memories and existing knowledge
 - ▶ Restoration of brain chemistry to a normal balance



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The Glymphatic System

- Facilitates clearance of soluble proteins, waste products, and excess extracellular fluid
- Increased clearance during sleep



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Age-Related Changes

- ▶ Adults 18-64 years: 7-9 hours each night
- ▶ More than 1/3 of adults do not get adequate sleep (at least 7 hours/night)
- ▶ Adults ≥ 65 years
 - ▶ Earlier wake time
 - ▶ Typically go to bed and wake up earlier than younger adults
 - ▶ Earlier circadian rhythm
 - ▶ Reduced sleep consolidation and Stage 3 sleep
 - ▶ Difficulty falling and staying asleep



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Cognitive Impairment-Related Changes

Reasons

- ▶ Neuronal pathways that initiate and maintain sleep are damaged
- ▶ Changes in the circadian "pacemaker" of the body
- ▶ Changes in the brainstem regions and pathways that regulate sleep-wake cycles

Manifestations

- ▶ Day-night sleep pattern reversals
- ▶ Frequent nighttime awakenings
- ▶ Increases in daytime sleepiness and napping



(Rose, Fagin & Lorenz, 2010)

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Impact of Alzheimer disease patients' sleep disturbances on their caregivers



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- 60% of caregivers reported that the person living with dementia had a sleep disturbance symptom (taking 30 or more minutes to fall asleep; having two or more nocturnal awakenings, wandering at least one time weekly during the night, loud snoring more than two times weekly, or daytime sleepiness)

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Care Partner-Related Sleep Changes

- Multiple nightly awakenings
- Shorter sleep duration
- Longer time to fall asleep
- Inconsistent sleep-wake times
- Longer wake after sleep onset
- Longer sleep onset latency
- Up to 66% of caregivers

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Baseline Comparison between Black and White Caregivers on Sleep Quality and Insomnia

| Measure | Race | N | Mean | SD | p-value |
|----------------------|-------------------------|----|-------|------|---------|
| Insomnia (ISI) | White | 62 | 6.28 | 5.91 | .012 |
| | African American/ Black | 30 | 10.50 | 7.79 | |
| Sleep Quality (PSQI) | White | 63 | 5.41 | 4.15 | .006 |
| | African American/ Black | 29 | 8.00 | 3.96 | |

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Subjective Evaluation

▀ Sleep history

- ▀ Perception of sleep problem
- ▀ Quality of sleep
- ▀ Sleep schedule
- ▀ Problems with falling asleep
- ▀ Problems with maintaining sleep
- ▀ Daytime sleepiness
- ▀ Impact on daytime functioning
- ▀ General emotional and physical problems
- ▀ Sleep hygiene (e.g., TV before bed)
- ▀ Sleep environment (e.g., noise, light)
- ▀ Caffeine intake

• Sleep diaries

• Questionnaires

- Insomnia Severity Index
- Pittsburgh Sleep Quality Index
- STOP BANG
- Epworth Sleepiness Scale

The image shows a grid for sleep diaries and a form for the Epworth Sleepiness Scale. The grid has columns for 'a.m.', 'Thu', 'Fri', 'Sat', 'Sun', 'Mon', 'Tue', and 'Wed'. The form is titled 'THE EPWORTH SLEEPINESS SCALE (To assess risk of Obstructive Sleep Apnea)' and includes instructions, a legend for the scale (0-3), and a table for recording sleepiness levels in various situations.

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Objective Measures

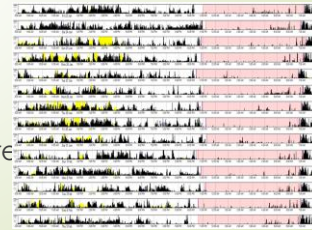
Polysomnography: involves use of

- Electroencephalography (EEG): measures electrical brain activity
- Electromyogram (EMG): records electrical activity from muscle movement
- Electrooculogram (EOG): records eye movements
- Electrocardiogram (ECG): measures heart rate and detects cardiac dysrhythmias
- Pulse oximetry: measures arterial oxygen saturation
- Breathing movements



Actigraphy

- Device worn on wrist or ankle that measure muscle motion, sleep duration, and sleep efficiency



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Non-Medication Interventions

■ Exercise



- General recommendation: 150 min/week of moderate-intensity activity or 75 min/week of vigorous-intensity activity + 2 days/week of strength training including major muscle groups
- Listening to soothing music before bed and brisk walking for 30 min in the evening improved sleep quality in middle-age and older adults
- 12-months of moderate-intensity exercise: female caregivers reported significantly improved sleep quality, compared to a nutrition education control group (King et al., 2002)

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Non-Medication Intervention

Light

- ▶ 2 weeks of bright or dim light: No independent improvement sleep; (Friedman et al., 2012)
- ▶ 4 weeks of blue-white light: increased circadian entrainment, and increased sleep efficiency and sleep time (Figueiro et al., 2015)
- ▶ 6 weeks of blue-white light: improved sleep quality, sleep adequacy, and reduced sleep disturbances and problems (Sloane et al., 2015)

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Non-Medication Management

▶ **Sleep Hygiene**

- ▶ Personal and environmental activities that can influence sleep
- ▶ Maintain a sleep schedule (including on weekends)
- ▶ Practice a relaxing bedtime ritual
- ▶ Sleep on a comfortable mattress and pillow
- ▶ Turn off electronics before going to bed
- ▶ No vigorous exercise within a few hours of bedtime
- ▶ Limit caffeine and alcohol intake prior to bed
- ▶ Evaluate bedroom for ideal temperature, sound, and lighting

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Non-Medication Interventions

Cognitive-Behavioral Therapy for Insomnia

- Stimulus control therapy
- Sleep restriction/consolidation therapy
- Relaxation training
- Cognitive restructuring
- Sleep hygiene education
- Trend in improvement in sleep quality following 2 sessions including sleep hygiene, stimulus control, cognitive therapy, personal goal setting, and relaxation techniques (Simpson and Carter, 2010)

Mindfulness-Based Stress Reduction techniques

- Breathing
- Body scan
- Hatha yoga
- Improved sleep quality following 8 weeks of meditation (Innes et al., 2012)
- Increased subjective sleep quality following 8 weeks of mindfulness training (Paller et al., 2015)

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Table 2. Thirteen Intervention Studies in Caregivers

| Source | No. of Caregivers | Intervention | Mean (SD) | | PSQI | |
|--|-------------------|--|--------------|-------------|---------------------------|-------------------------|
| | | | Intervention | Control | Intervention | Control |
| McCurry et al., ³⁴ 1998 | 36 | Behavioral intervention | 6.4 (0.9) | 6.1 (1.0) | 7.8 (3.3) | 10.6 (4.4) |
| King et al., ¹⁶ 2002 | 94 | Moderate-intensity exercise | 6.69 (1.16) | 6.66 (1.12) | 7.14 (3.40) | 7.51 (3.67) |
| Ancoli-Israel et al., ¹⁸ 2005 | 63 | Cholinesterase inhibitors (galantamine hydrobromide/donepezil hydrochloride) for care recipients | NA | NA | -0.97 (2.96) ^a | NA |
| McCurry et al., ¹⁹ 2005 | 36 | Sleep hygiene, daily walking, light exposure | NA | 7.0 (1.0) | NA | 8.6 (3.4) |
| Lee et al., ²⁶ 2007 | 39 | Institutional respite care | 6.88 (0.85) | 6.72 (0.81) | NA | NA |
| Korn et al., ²⁸ 2009 | 42 | Polarity therapy | NA | NA | -3.1 (3.9) ^b | -1.4 (3.2) ^b |
| Rose et al., ⁵⁵ 2009 | 38 | Cranial electrical stimulation | NA | NA | 7.8 | 8.2 |
| Elliott et al., ²⁹ 2010 | 495 | Resources for Enhancing Alzheimer's Caregiver Health (REACH) II trial | NA | NA | NA | NA |
| Simpson and Carter, ³⁰ 2010 | 10 | Behavioral intervention | 6.88 (1.43) | 7.18 (1.19) | 5.20 (3.91) | 7.80 (4.98) |
| Hirano et al., ³² 2011 | 31 | Moderate-intensity exercise | NA | NA | NA | NA |
| Figueiro et al., ³⁸ 2015 | 34 | Tailored lighting | 5.71 (0.94) | 5.89 (1.21) | 6.22 (2.93) | 6.70 (2.13) |
| Sloane et al., ⁴¹ 2015 | 17 | Blue-white light therapy | NA | NA | 3.7 | 5.4 |
| Gibson et al., ⁴⁵ 2017 | 15 | Bright light therapy, exercise, sleep hygiene education | NA | 7.38 (0.82) | NA | 6.60 (2.80) |

Gao C, Chapagain NY, Scullin MK. Sleep Duration and Sleep Quality in Caregivers of Patients With Dementia: A Systematic Review and Meta-analysis. *JAMA Netw Open*. 2019;2(8):e199891. doi:10.1001/jamanetworkopen.2019.9891

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So What Now?

- Speak to family or healthcare provider if you have or are caring for someone and you notice changes in sleep habits
- Be prepared to describe what you observe or experience, when they started, if you did any to alleviate them and if it helped or didn't help
- Establish a nightly routine
- Reduce lighting at night and increase during the day
- Stay active with safe exercises and fun games and activities to remain awake during the day

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Acknowledgement and Thank you

- National Hartford Center of Gerontological Nursing Excellence
- National Institute on Aging (K23AG070378)
- Research Supplement to Promote Diversity in Health-Related Research (R01AG054079; R01AG039495)
- Alzheimer's Association (AARDG-643440)
- Programs to Increase Diversity Among Individuals Engaged in Behavioral and Sleep Medicine Research (R25HL105444)
- Goizueta ADRC Pilot Grant (P50AG025688)
- Nell Hodgson Woodruff School of Nursing (P30NR018090)

**Persons
living with
cognitive
impairment
and their
care
partners**

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