CMEO
BriefCase

The Impact of OSA-Related EDS on HRQoL: Time for a Wake-Up Call

Supported by an educational grant from Jazz Pharmaceuticals

CME OUTFITTERS

Richard K. Bogan, MD, FCCP, FAASM

President, Bogan Sleep Consultants, LLC

Associate Clinical Professor
University of South Carolina School of Medicine
Columbia, SC

Associate Clinical Professor
Medical University of South Carolina
Charleston, SC

Terri E. Weaver, PhD, RN, FAAN, ATSF, FAASM

Dean Emerita
Professor Emerita of Biobehavioral Nursing Science
College of Nursing
University of Illinois Chicago
Chicago, IL

Professor Emerita of Nursing
University of Pennsylvania
Philadelphia, PA

Learning Objective

Recognize the impact and burden of OSA-related EDS on HRQoL and work productivity.

Audience Response

When evaluating a patient with excessive daytime sleepiness (EDS) related to obstructive sleep apnea (OSA), how often do you assess the quality of life and functional impact of OSA-related EDS?

1. 0% of the time
2. 1% - 25% of the time
3. 26% - 50% of the time
4. 51% - 75% of the time
5. 76% - 100% of the time

Patient Case: Margaret

- 35-year-old African American female w/ moderate OSA indicated by PSG → AHI = 26 episodes/hour; O2 sat = 82%; ESS = 15
- Loud snoring, frequent awakenings (no trouble going back to sleep), 1-2 nocturia episodes w/ night sweats, and occasional awakenings w/ elevated heart rate
- CPAP was initiated using an auto mode at a pressure of 7-12 cm (100% adherence); AHI = 1.8, average use of 7 hours; ESS = 13; FOSQ = 14; snoring eliminated

- Occasionally late for work (retail service)
- Caused two motor vehicle accidents in the last year
- Sometimes distracted, drifting off, or daydreaming while driving

AHI = Apnea-Hypopnea Index; CPAP = continuous positive airway pressure; ESS = Epworth Sleepiness Scale; FOSQ = Functional Outcomes of Sleep Questionnaire; PSG = polysomnography

Medical History

- Gradual weight gain (BMI = 34), borderline hypertension
- Family history: Siblings and mother (OSA)
- Social history: Married but unable to socially commit to her husband and friends
- Melancholia, w/out frank depression or anxiety, often present
- No medications aside from oral contraceptives

Meet Margaret

Patient Case: Margaret

- 35-year-old African American female w/ moderate OSA indicated by PSG → AHI = 26 episodes/hour; O2 sat = 82%; ESS = 15
- Loud snoring, frequent awakenings (no trouble going back to sleep), 1-2 nocturia episodes w/ night sweats, and occasional awakenings w/ elevated heart rate
- CPAP was initiated using an auto mode at a pressure of 7-12 cm (100% adherence); AHI = 1.8, average use of 7 hours; ESS = 13; FOSQ = 14; snoring eliminated

- Occasionally late for work (retail service)
- Caused two motor vehicle accidents in the last year
- Sometimes distracted, drifting off, or daydreaming while driving

Audience Response

Which of the following is accurate regarding the impact of OSA-related EDS?

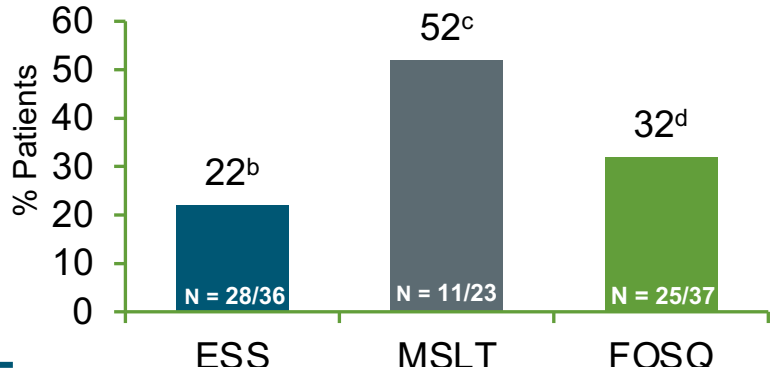
1. Patients with OSA are 2-3x more likely to be in an accident while driving
2. Up to 30% of patients who adhere to CPAP experience persistent EDS
3. The need to take naps only presents when patients receive less than 6 hours of sleep
4. An abundance of evidence exists on the impact of EDS on health-related quality of life (HRQoL)
5. I don't know.

Excessive Sleepiness May Persist Despite ≥ 6 Hours CPAP Use Per Night

- Despite adequate treatment with CPAP, patients with OSA still have residual EDS[1]
- In a multicenter trial (n = 128 patients with AHI ≥ 15) patients with OSA were treated with CPAP for 3 months and assessed for sleepiness before and after airway treatment using[2]:
  - Self reported ESS and FOSQ
  - Clinically-derived MSLT

For patients reporting ≥6 hours of CPAP use per night, **based on MSLT (n = 23), more than half of participants** continued to experience EDS[2]

Percent Patients Failing to Achieve a Normal Score With ≥ 6 h CPAP Use per Night for 3 Months[2,a]



[a]Evaluated in patients with pre- and post-treatment assessments who had abnormal pretreatment values[2]
[b]Subjective EDS defined as ESS (> 10)[2]
[c]Objective EDS according to MSLT sleep latency < 7.5 min[2]
[d]Functional impairment defined as FOSQ < 17.9[2]

MSLT = Multiple Sleep Latency Test

1. Foster SN, et al. *Sleep Breath.* 2020;24(1):143-150. 2. Weaver TE, et al. *Sleep.* 2007;30(6):711-719.

Impact of OSA-related EDS on HRQoL and Psychosocial and Work Functioning

Brain fog

Memory problems

Impaired critical thinking

Falling asleep throughout the day

Employment: frequent job changes, job loss, absenteeism / presenteeism

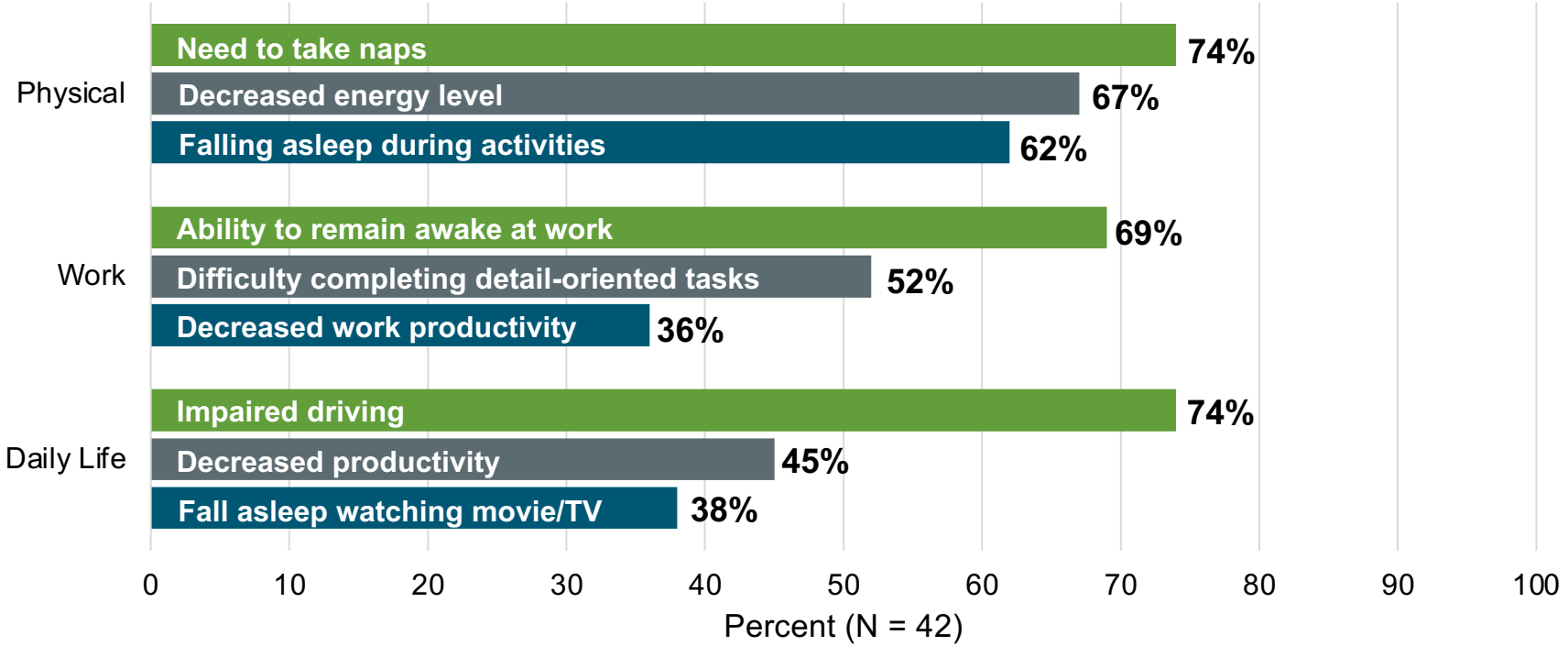
Strain on relationships

Worsened HRQoL

Increased risk of accidents while driving

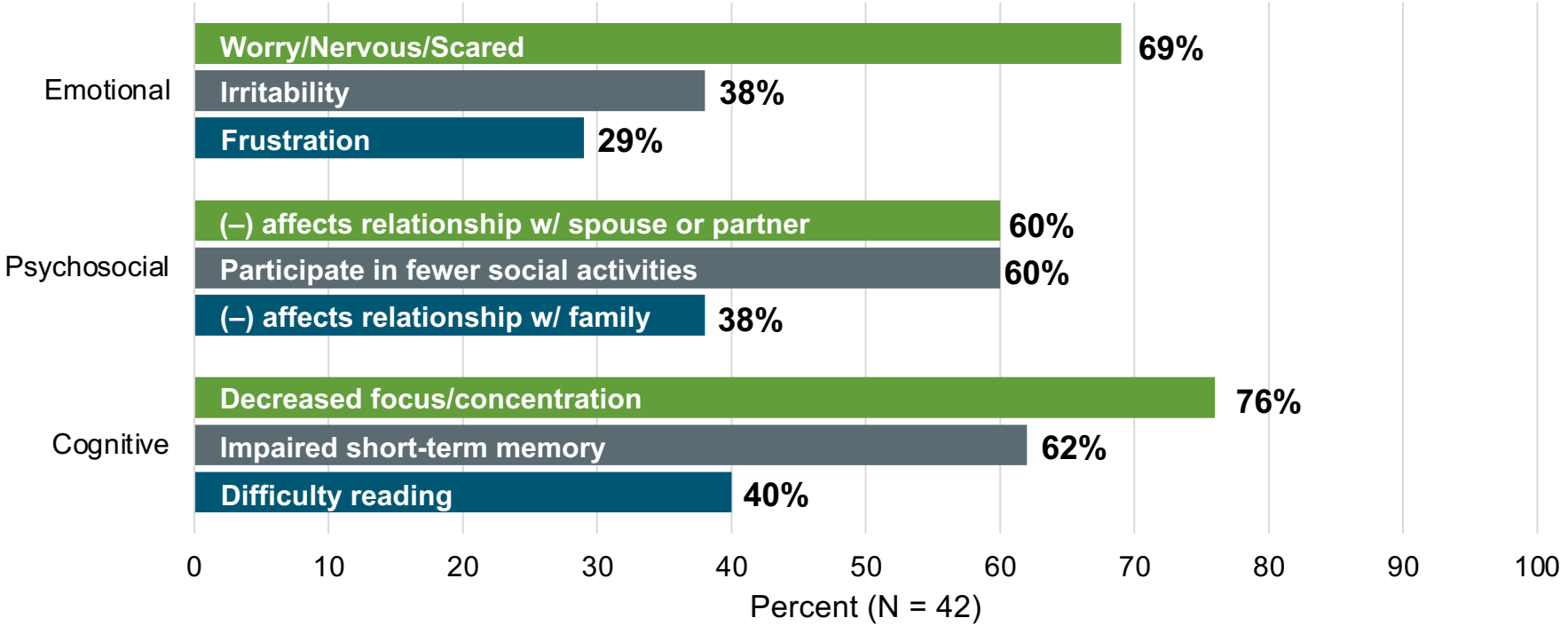
Waldman LT, et al. *Health Qual Life Outcomes*. 2020;18:128.

Impact of OSA-related EDS



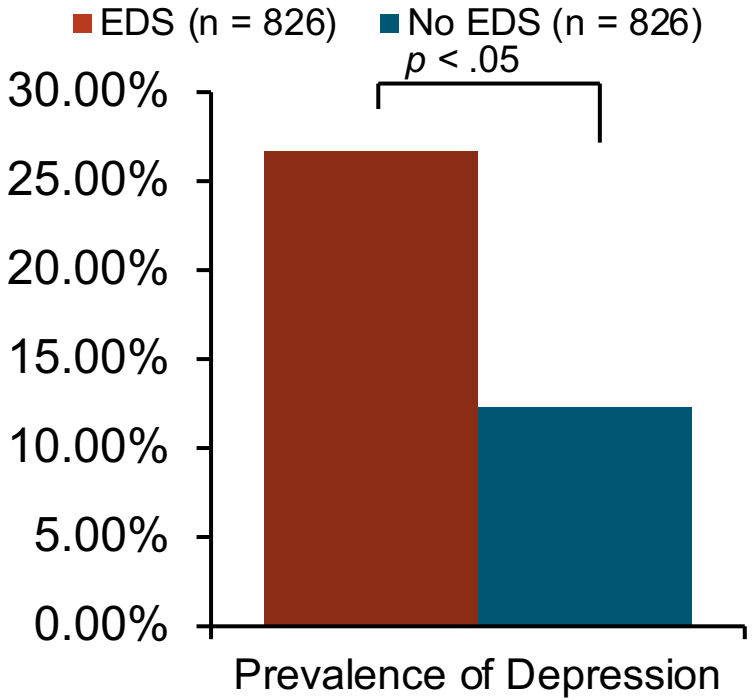
Waldman LT, et al. *Health Qual Life Outcomes*. 2020;18:128.

Impact of OSA-related EDS (cont.)



Waldman LT, et al. *Health Qual Life Outcomes*. 2020;18:128.

EDS in OSA and Depressed Mood or QoL



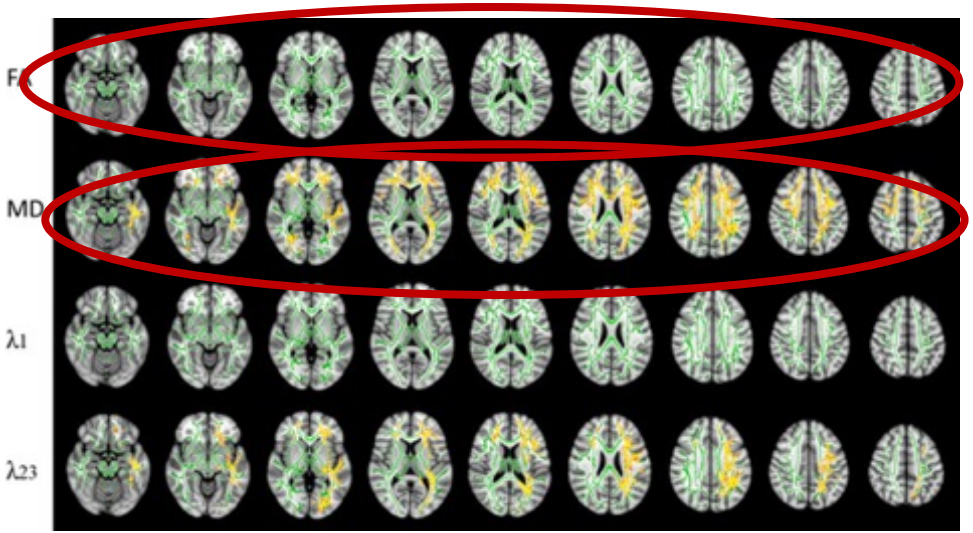
- Those with EDS often have higher rates of depression and QoL based on MCS and SF-12/36 indicators
- Employees with OSA or EDS are at least 2X more likely to be involved in occupational incidents

MCS = mental health composite score; QoL = quality of life

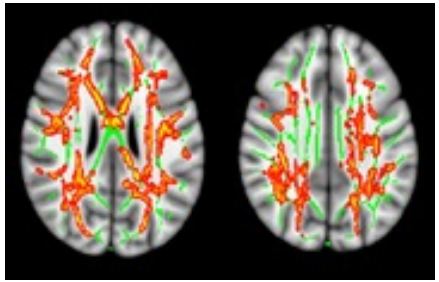
Leger D, et al. *Sleep Med Rev*. 2020;51:101275. Gharibi V, et al. *Int J Occup Environ Med.* 2020;11(2):95-107.

Brain White Matter Changes in CPAP-Treated Patients with Residual Sleepiness

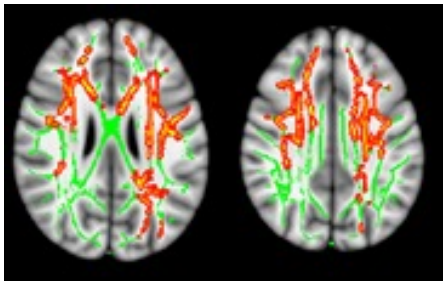
- White matter connectivity measured by FA, myelin MD, axial diffusivity (k1), & radial diffusivity (k23) between sleepy (N = 12) & non-sleepy male groups
- CPAP > 5hr/night. Sleepy PVT lapses > 5



FA Maps



MD Maps



Red/yellow: white-matter tracts where statistically significant changes were observed between the sleepy and non-sleepy groups ($p < .05$)

FA = fractional anisotropy ; MD = mean diffusivity; PVT = psychomotor vigilance task

Xiong Y, et al. *J Magn Reson Imaging*. 2017;45(5):1371-1378.

Measuring Treatment Effectiveness

- Interviews, questionnaires: ESS, FOSQ, PHQ-9

Epworth Sleepiness Scale

- The ESS is the most frequently used, validated self-report assessment of a patient's sleepiness[1]
- On a 4-point scale, patients rate their likelihood of falling asleep during 8 different situations (reading, driving, etc.)[2]
- The ESS can also be used to monitor the progression of or improvement in sleepiness over time[3]

Functional Outcomes of Sleep Questionnaire

- The FOSQ (or shorter FOSQ-10) assesses the effect of sleepiness on daily functioning[4,5]
- Evaluates 5 domains[4,5]
  - General productivity
  - Activity level
  - Vigilance
  - Social outcomes
  - Intimate/sexual relationships

Subjective measures rely on patients to accurately report their own sleepiness; however, they are[4]:
- Practical for monitoring progression or improvement in EDS
- Simple to administer

- Objective data: MSLT, MWT, etc.

PHQ-9 = Patient Health Questionnaire-9

1. Miglis MG, et al. *Sleep Med Clin*. 2014;9(4):491-498. 2. Johns MW. *Sleep*. 1991;14(6):540-545. 3. Ahmed IM, et al. *Sleepiness: Causes, Consequences and Treatment*. 2011. 4. Chapman JL, et al. *Sleep Med Clin*. 2016;11(3):353-363. 5. Chasens ER, et al. *Sleep*. 2009;32(7):915-919.

Audience Response

Now, when evaluating a patient with EDS related to OSA, how often will you assess the quality of life and functional impact of OSA-related EDS?

1. 0% of the time
2. 1% - 25% of the time
3. 26% - 50% of the time
4. 51% - 75% of the time
5. 76% - 100% of the time

Audience Response

Which of the following is accurate regarding the impact of OSA-related EDS?

1. Patients with OSA are 2-3x more likely to be in an accident while driving
2. Up to 30% of patients who adhere to CPAP experience persistent EDS
3. The need to take naps only presents when patients receive less than 6 hours of sleep
4. An abundance of evidence exists on the impact of EDS on HRQoL

SMART Goals

Specific, Measurable, Attainable, Relevant, Timely

- Recognize that EDS may persist despite adherence to CPAP.
- Assess patients with OSA for persistent EDS.
- Have a heightened awareness of the impact of EDS on work, psychosocial, and cognitive functioning, as well as quality of life.

CME BriefCase 2

Crafting an Individualized Plan to Optimize Patient Outcomes: Safe, Effective, and Personalized Treatment

CME BriefCase 3

Plugging Recent Clinical Trial Data into Treatment Decisions: A Fundamental Formula

www.cmeoutfitters.com/sleep-disorders-hub/

CME OUTFITTERS

Sleep Disorders Hub

Free resources and education to educate health care professionals and patients on sleep disorders

https://www.cmeoutfitters.com/sleep-disorders-hub/

CME OUTFITTERS

To Receive Credit

To receive CME/CE credit for this activity, participants must complete the post-test and evaluation online.

Participants will be able to download and print their certificate immediately upon completion.