

Sleepiness, Napping and Health Risk in the Elderly



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Disclosures

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Significance

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- Daytime sleepiness and napping are common
- Predict adverse health outcomes and poorer function, physical and cognitive
- Cultural variations/norms difficult to take into account
- Relationships to nighttime sleep are complex
 - Napping and sleepiness studies do not always have complete data on sleep quality

Significance

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- Sleepiness and napping tend to be studied separately – not necessarily related
- Reflection of poorer night-time sleep?
- What to recommend?



State-of-the-Art Knowledge

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- **Prevalence and incidence**
 - Daytime Sleepiness
 - Napping
- **Characteristics**
- **Outcomes – risks and benefits**
- **Interventions**

Daytime sleepiness

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- **Assessment**
 - Self-report, single item
 - Epworth daytime sleepiness scale
 - Sleep latency test
- **Prevalence**
 - 15-20%
 - Increase with age from 10 – 30 % age 65 to 85+
 - Men vs women – mixed results

Daytime sleepiness – risk factors

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- Older age
- Sleep disordered breathing
- Poor self reported sleep quality
- Greater REM latency
- Pain
- Medications with sleepiness side effects
- Stroke, carotid disease
- Congestive heart failure
- Kidney disease - dialysis
- Obesity
- Poor self reported health
- Depression
- Functional limitations
- Elevated inflammatory markers

Pack AI, et al. Ann Neurol 2006 Newman AB et al JAGS, 1997 Roumelioti ME, Clinical Journal of the American Society of Nephrology 2011

Outcomes

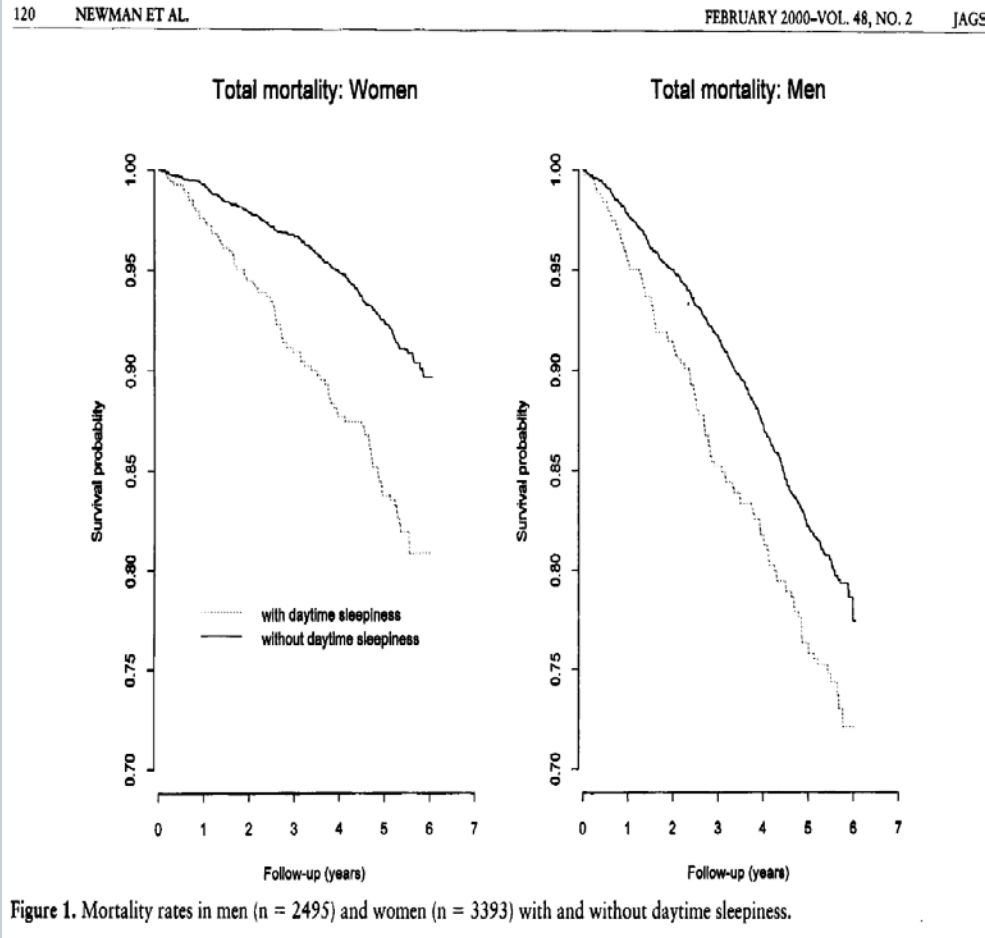
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- **Function**
 - Social function
 - General productivity
 - Vigilance
 - Physical activity
- **Cognitive function and cognitive decline**
- **Cardiovascular events, especially congestive heart failure**
- **Mortality**

Gooneratne NS, et al, JAGS 2003 Chasens, ER, et al J Sleep Research 2007 Ohayon MM, et al Archives of Internal Medicine 2002 Newman AB, et al, JAGS, 2000 Jaussent I, PloS one 2013 Endeshaw Y, et al. Sleep 2013 Spira AP, JAGS 2008 Blackwell T, et al Sleep 2011 Gooneratne NS, et al Sleep 2011 Jaussent I, et al Sleep 2012

Daytime sleepiness and Total Mortality In the Cardiovascular Health Study

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Daytime Sleepiness – Higher risk in women with report of frequent awakening

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122 NEWMAN ET AL. FEBRUARY 2000-VOL. 48, NO. 2 JAGS

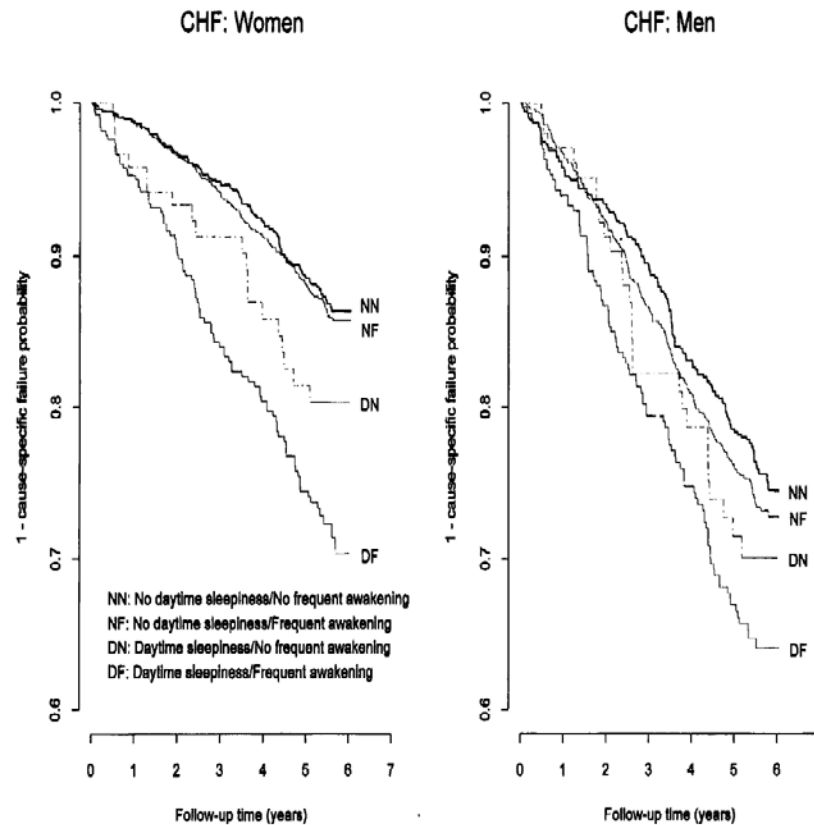


Figure 2. Incident CHF in men (n = 2368) and women (n = 3260) with and without daytime sleepiness and frequent awakening.

Interventions

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- **Targeting poor sleep**
 - Sleep hygiene and other primary sleep interventions
- **Targeting poor health**
 - Improving CHF, SDB, pain, dialysis
- **Targeting physical activity**
 - Physical activity (PSQI daytime function subscale)
 - Tai chi (Epworth Sleepiness Scale)

Reid K,J, Sleep Medicine 2010 King A, JAMA 1997 Li F, et al. JAGS 2004

Napping

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- **Assessment - yes/no, frequency, duration, regularity**
 - Self report
 - Actigraphy with diary
 - PSG
- **Prevalence**
 - Regular napping 10% age 55 to 25% age 75-84 (National Sleep Foundation Poll)
 - Little sex difference
 - Any napping – 54% ages 70-89 (LIFE Pilot), mean 55 minutes duration

Foley D, et al. Am J. Geriatr Psych 2007

Picarsic JL, et al. JAGS 2008

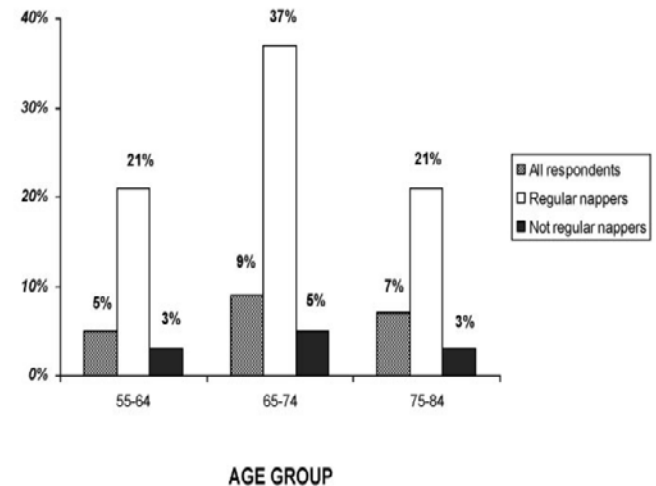
Napping – characteristics of Nappers

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- Greater comorbidity
- Higher BMI
- Retirement/unemployment
- Pain
- Nocturia
- Depression
- Memory complaints
- Excessive daytime sleepiness, short sleep, awakening at night or too early
- Not associated with insomnia, restless legs, sleep apnea or longer sleep
- Diabetes, obesity and lower 3MSE
- CAD, Cancer

Foley D, et al. Am J. Geriatr Psych 2007
Jung K-I Sleep Medicine 2013

FIGURE 1. Prevalence of Excessive Daytime Sleepiness Overall and According to Regular Napping by Age Group



Picarsic JL, et al. JAGS 2008

Napping and sleep duration

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- **Nappers – longer or shorter nighttime sleep?**
 - Some show similar nocturnal sleep time
 - Others show shorter nighttime sleep
- **Distinguishing evening nap from falling asleep in front of the TV**
- **Not always associated with poor nighttime sleep (compensatory or elective?)**
- **Actigraphy**
 - Sleep fragmentation associated with higher odds of napping, but not sleep duration

Pecarsic JL, et al JAGS 2008 Dautovich ND, et al JAGS 2008 Goldman SE, et al. Sleep 2008 Patel Sr, et al. Sleep 2012 Tsai SY, et al. Nurs Res, 2013

Outcomes

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- **Mortality**

- Napping > 30 min - 50 – 25 % higher risk W>M (Rancho Bernardo)
- Daily napping in women – 35% higher risk, mostly CVD and other cause
- Napping may mitigate the impact of short sleep on mortality risk

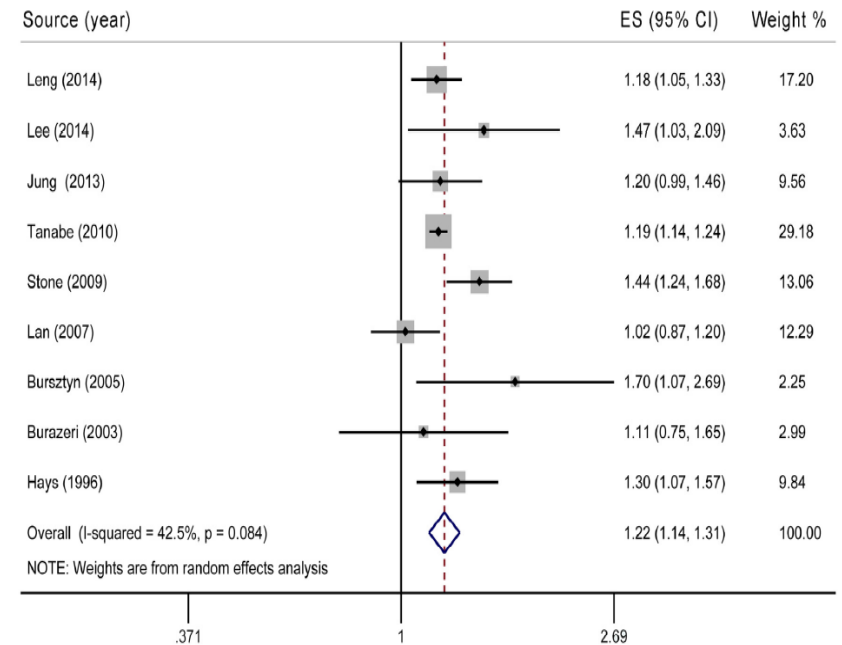


Fig. 2. Meta-analysis for daytime napping and all-cause mortality.

Jung K-I, et al, Sleep Medicine 2013
al. Sleep Medicine 2015

Stone KL JAGS 2009
Zhong G et al. Sleep 2012

Interventions

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- **Napping as an intervention**
 - Greater 24 hour total sleep
 - Enhanced cognitive performance
 - Lab study – greater total sleep, no effect on cognitive performance

Campbell SS , et al JAGS 2011 Monk TH, et al Sleep, 2001

Knowledge gaps

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- **Relationships between sleepiness, fatigue, tiredness, fatigability and napping?**
 - We think of these as distinct syndromes
 - ✦ Fatigue more “peripheral,” physical symptom, not related to being sleepy. Tiredness used for both fatigue and sleepiness.
 - Need for more comprehensive understanding of relationship between night time sleep, daytime symptoms and impact on function
- **Relationship between daytime and nighttime sleep**
 - Better capture napping – is napping good for you? Does it mark underlying heart failure, cognitive decline?

Knowledge gaps

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- **Should napping be prescribed?**
 - More work on effects of napping on nighttime sleep and daytime function
 - Currently, sleep hygiene recommendations oppose napping
- **Complacency regarding sleepiness**
 - Should sleepiness be “worked up” for underlying health conditions?
 - Often “taken for granted.” Normative?

Research Opportunities

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- **Standardization of assessment of sleepiness and napping**
 - Frequency, duration, variability – methodologic development.
- **Relationship to early cognitive decline**
 - Marker of cerebrovascular disease?
 - Cause of executive cognitive functional impairment?

Research Opportunities

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- **Interventions**
 - Interventions on daytime symptoms (most studies target nighttime sleep complaints with daytime function as outcome of interest)
 - Multidimensional interventions – behavioral , underlying illness, medication use, environment – primary care based?
- **Interventions can probe mechanisms**
 - e.g. alterations in rhythms, biomarkers

Thanks
for staying awake!

QUESTIONS?

