Sleep and Sleep Disorders in Women

Marta Novak, MD, PhD

Dept. of Psychiatry, UHN and University of Toronto
Institute of Behavioral Sciences, Semmelweis University,
Budapest, Hungary
Objectives

• Learn about sleep and sleep problems in women across the lifespan
• Outline the most important sleep disorders in women
• Discuss clinical significance of sleep disorders in women
Why is it important to learn about sleep disorders?

- Very frequent complaints
- Leading symptoms
- Quality of life
- Severe consequences

- Co-morbidity with medical and psychiatric disorders

Prognostic factor? Precipitating factor?

- Public health relevance
Sleep: bridge between somatic and psychological functioning, with significant social influences
Frequent and important sleep disorders

- Sleep-related movement disorders
  - Restless legs syndrome
  - Periodic limb movements in sleep

- Sleep-related breathing disorders
  - Sleep apnoe

- Insomnia(s)
ICSD- 2, - 8 major categories

- Insomnia
- Sleep related breathing disorders
- Hypersomnias of central origin
- Circadian rhythm sleep disorders
- Parasomnias
- Sleep related movement disorders
- Isolated symptoms and normal variants
- Other sleep disorders
Gender differences in the prevalence of sleep disorders

<table>
<thead>
<tr>
<th>Women</th>
<th>Man</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insomnias</td>
<td>Hypersomnias: narcolepsy, Kleine-Levin sy.</td>
</tr>
<tr>
<td>Parasomnias: nightmares, sleep-related eating disorders</td>
<td>Circadian rhythm disorders</td>
</tr>
<tr>
<td>Sleep-related movement disorders: RLS</td>
<td>Parasomnias: REM-sleep behav. disorders., sleep paralysis, sleepwalking, night terror, enuresis nocturna</td>
</tr>
<tr>
<td></td>
<td>Sleep-related breathing disorders</td>
</tr>
<tr>
<td></td>
<td>Sleep-related movement disorders: PLMS, bruxism</td>
</tr>
</tbody>
</table>

Krishnan, 2006
Why Women Can’t Sleep

PLUS

- Pregnancy & Depression
- HPV: A ‘Cancer Shot’?
- What to Do About Menopause
Sleep disruption in women – a bio-psychosocial problem

- Objective vs. subjective gender differences
- Hormonal influences
- Menses, pregnancy, menopause
- Mental disorders
- Social factors, children, elderly

- 31% report daytime effects of sleep disturbance; 1/4 of women report significant daytime sleepiness;
- 74% report sleeping < 8 hours / night
- 27% report impaired job performance
- 24% impaired ability to care for family
- 14% reported falling asleep while driving

- 53% often / always experienced insomnia during previous month
- 13% used prescription sleep meds
- 8% used alcohol for sleep
Hormonal Effects on Sleep

- Inconsistent reported effects on SWS
- Sleep architecture changes dependent upon exogenous vs endogenous hormones
Hormonal effects

• ESTROGEN
  □ ↑ REM
  ↑ Total sleep time
  □ ↓ sleep latency, nighttime awakenings

• PROGESTERON:
  • NREM
  • Benzodiazepine-like effect
  • Sedativ effect
  □ ↓ sleep latency, awakenings
Menstrual period and sleep

- Large individual differences: 15% of women vulnerable
- Impact on body temperature
- Circadian changes (like “jet lag”)
- Pain, discomfort
- Mood, PMS
Sleep and the Menstrual Cycle

- Overall: Increase in subjective sleep complaints late luteal phase:
  \[ \uparrow \text{SOL, WASO} = \downarrow \text{SE, EDS} \]

- \textit{But} insomniacs do not have menstrual cycle-related differences in SOL, SE

- Dysmenorrhea associated with decreased SE
PMS and Sleep

- Excessive daytime sleepiness correlated with PMS symptoms (bloating, cramps, etc); sleep onset and maintenance insomnia

- Changes in sleep architecture: ↓SWS (persists), ↓REM, ↑SOL, ↑WASO = ↓SE

- Menstruation-linked periodic hypersomnia:
  - Begins around time of menarche
  - Recurrent 6 - 10 day episodes of EDS
Sleep and Pregnancy

- Increase in subjective sleep complaints
- Changes in sleep architecture
- Etiologic factors include:
  - Endocrine changes:
    - Progesterone: ↑ fatigue, ↑ body temp, ↑ respiratory rate, frequent urination
    - ? role prolactin, cortisol
  - Physiologic changes:
    - ↑ abdominal mass, ↑ vascular load
Sleep in Pregnancy: Changes in Sleep

ARCHITECTURE

• Initial changes 12 weeks; ↑ 3rd trimester & early postpartum weeks

• Slight decrease REM

• + / - Decreased SWS

• Decreased SE

• Increased WASO
Sleep in Pregnancy: Changes in Sleep (cont.)

CLINICAL

• First trimester fatigue, sleepiness
• Poorer sleep quality
• Insomnia (maintenance)
• Increased daytime sleepiness
• 97% of women fail to sleep through night third trimester
Sleep and Pregnancy: Primary Sleep Disorders: Snoring, OSA

- Etiology multifactorial, eg. ↓ O2 sat in supine position; ↑ CO2 related to hyperventilation / increased tidal volume; nasal congestion
- 30% women report onset of snoring in pregnancy (second trimester)
- ↑ snoring associated with fetal outcomes, preeclampsia
Sleep and Pregnancy: Primary Sleep Disorders: RLS/PLMD

- Restless Legs Syndrome/ Periodic Limb Movement Disorder: may be associated with Fe deficiency anemia, diabetes, uremia; symptoms usually subside postpartum
- 15-20% women develop RLS in third trimester
- More prev after multiple pregnancies
Sleep and Pregnancy: Other Issues

- Sleep problems associated with pregnancy complications: Preeclampsia, nocturnal backache / leg cramps, GER

- Sleep and fetal risk:
  - ? association of sleep deprivation and premature labor;
  - snoring associated with FGR, ↓ Apgars, 43% snorers vs 22% non-snorers fetal complications
Postpartum Sleep

• 30% new mothers report disturbed sleep
• SE in first 2-4 weeks lower than third trimester; average 2 hrs WASO
• First-time mothers’ sleep most disturbed
• Women with premature infants have ↓ TST, ↑ WASO, alterations melatonin, cortisol
Postpartum Depression and Sleep

- Studies reporting nighttime labor & sleep disruptions (3rd trimester) associated with depressed mood after childbirth
- Sleep/wake patterns associated with depressed mood, emotional lability across postpartum period
- Shortened REM latencies associated with depressed mood
Sleep and Menopause

- Increase in SOL; 20% report sleeping < 6 hrs
- Difficulty in sleep maintenance
- Role of nocturnal “hot flashes”: more frequent arousals/awakenings (q8 vs 18 min), ↓ SE, increased SWS
- Social changes, other medical problems
Sleep and Menopause

- OSA: increased prevalence and severity post-menopausal
- HRT may improve SE; OSA symptoms
- Insomnia may become conditioned despite hormone replacement therapy; role of various replacement protocols
Symptoms of OSA

- Loud snoring
- Breathing pauses
- Excessive daytime sleepiness
- Non-restorative sleep
- Dry mouth and headaches

Upon awakening
Neuropsychological symptoms

- Cognitive problems
- Irritability, short fuse
- Depression
- Anxieties
### Symptoms of OSA in women

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Assoc. Clinical features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Hypothyreosis</td>
</tr>
<tr>
<td>Insomnia</td>
<td>Anxieties</td>
</tr>
<tr>
<td>Palpitation</td>
<td>Nightmares</td>
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<tr>
<td>Daytime tiredness</td>
<td>Sleep-related hallucinations</td>
</tr>
<tr>
<td>Tension</td>
<td>RLS</td>
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<tr>
<td>Morning headaches</td>
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Sleep Disorders in Women: Insomnia

- Results in significant direct and indirect health care costs
  - 49% adult US population occasional;
  - 12% chronic
- 1.5 - 2X more common in women
Medical disorders

- Endocrine disorders, POS
- Breast cancer
- Diabetes? – gender differences?
- Cardiovascular disorders (menopause)
- Aging
- Iatrogenic sleep disorders: medications, hospitalization
Significance of insomnia

• Individual effects: nighttime, daytime symptoms and quality of life. Mortality?

• Societal effect: impact on relationships and social life, socio-economical costs (burden of illness)
Epidemiology

• Until recently, lack of large studies
• Development of valid screening tools
• Major sleep disorders: insomnia and apnoe
• Gender differences: woman ins, man apnoe? Special populations: elderly,
• Every 3-4. adult has a sleep problem?
• Everyone will have a sleep problem???
Prevalence of insomnia symptoms

- Presence: 30–48%
- At least 3 nights/week or often: 16–21%
- Moderately to extremely: 10–28%

- Insomnia symptoms + daytime consequences: 9–15%

- Dissatisfaction with sleep quality or quantity: 8–18%

- Insomnia diagnosis: 6%

Ohayon, 2002
Meta-analysis of the prevalence of insomnia

Zhang, 2006

Figure 1—Forest plot of risk ratio (random-effects model) among 29 studies to compare the prevalence of insomnia between men and women.

*These studies are listed according to their weights (from low to high).
The black box at the bottom is the overall risk ratio.
Psychophysiological insomnia

- Learned /conditional/primer insomnia
- 15% of chronic insomniacs
- Chronic anxiety with somatization
- Associations which interfere with sleep
- Difficulties falling asleep
- No other DSM diagnosis
- Often comorbid with other (psycho)somatic conditions and drug abuse
Insomnia and depression

- Leading symptom of depression
- PSG features of depression
- WHO Collaborative Study (Üstün et al, 1996): 26,000 pt 27% sleep complaint, half of them mental health problem
- Breslau et al (1996): 1000 pt, longitudinal study. 2 weeks of insomnia is a predictor of major depression
“Snoring Spouse Syndrome”

- women 22%, men 7% reported sleep disruption because of snoring of spouse
- Insomnia
- Morning headaches
- Daytime sleepiness

(NSF 2000)