Sleep Health and Appropriate Use of OTC Sleep Aids in Older Adults

The Gerontological Society of America, Orlando, Florida, November 20, 2015

Objectives

- Increase understanding of sleep health and OTC sleep aid use in older adults (ages 65 years and older)
- Identify opportunities for promoting safe and effective use of OTC sleep aids among older adults

Topics

- Aging and sleep disturbance
- Current state of OTC therapeutics for sleep disturbance
- Epidemiology of OTC sleep aid use and aging
- Pharmacist perspective on OTC sleep aids: gaps in therapies and clinical practice
- Gender differences in use of OTC sleep aids
Sleep Health and Appropriate Use of OTC Sleep Aids in Older Adults—Recommendations of a Gerontological Society of America Workgroup

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Table 1. Differences by Age among People Reporting Symptoms of Insomnia and Insomnia or Sleep Difficulties in Past 12 Months, Weighted for U.S. Population

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Function-skill test (p &lt; 0.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any report of insomnia or difficulty sleeping, %</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>Any sleep disorder, %</td>
<td>14</td>
<td>9</td>
</tr>
<tr>
<td>Any sleep disorder, %</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Insomnia, %</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Waking due to anxiety, %</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Waking due to depression, %</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Aging and Sleep Disturbance

Why Is Sleep Important?

- 50 million to 70 million Americans have a chronic sleep disorder (IOM 2006)
- 28% of adults report frequent insufficient sleep; 4.7% report falling asleep driving in the past 30 days (CDC 2008, 2010)
- Sleep disorders and deprivation are associated with many deleterious health consequences (IOM 2006)
- Annual direct (medical) and indirect (accidents, lost productivity, etc.) costs total hundreds of billions of dollars (IOM 2006)
Sleep, Circadian Rhythms, and Health

Sleep disorders
- Insomnia
- Sleep apnea
- Restless legs
- Narcolepsy

Aging
- Circadian disruption
- Behavioral lifestyle
- Work schedules
- Physical activity level

Sleep Deficiency
Circadian Dysfunction

Health, Safety, and Productivity

Cognitive performance

Similarities Between Sleep Loss and Aging

Function
- Glucose tolerance
- Insulin sensitivity
- CRP
- Cardiac sympathetic activity
- Plasma norepinephrine
- Evening cortisol levels
- Plasma TSH levels
- Plasma leptin levels
- Mood
- Vigilance
- Subjective alertness
- Cognitive function

Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults

Possible Underlying Causes of Sleep Disturbance and Insomnia Symptoms

Common Conditions

1. Altered Sleep Regulation & Circadian Rhythms
2. Medical, Neuromodulatory, or Psychiatric Conditions
3. Psychosocial Factors

Difficulty Initiating & Maintaining Sleep
Depression
Chronic Pain / Pulmonary Disease
Late-Life Stressors

Sleep Loss
Restless Legs
Globus (Sleep Apnea)

Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults

Sleep Disturbances Increase With Age

Large-scale community survey of non-institutionalized American adults, ages 18 to 79 years old

Impact of Poor Sleep in Elderly Adults

Poor Sleep
- Increased Risk of Falls
- Shorter Survival
- Impairment in Memory & Concentration
- Difficulty in Accomplishing Daily Tasks
- Decreased Ability to Stay Awake
- Increased Consumption of Health Care Resources
- Cardiometabolic Disease Risk
- Depression Risk

Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults

Insomnia With Short Sleep Duration Is Associated With Health Outcomes

Health Condition
- Hypertension
- Type 2 diabetes
- Mortality
- Cortisol

Sleep Duration
- Yes (<6 hours)
- No

Interaction
- Yes
- No

Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults
Poor Health Impacts Prevalence of Insomnia in Older Adult Population

Cognitive Decline and Insomnia in Older Adults

Summary of Study of Osteoporotic Fractures: Study Results (n = 3,022)

Impact of Insomnia on Quality of Life

Conclusions

• Although sleep patterns change with age, it is the change in the ability to sleep and co-morbid medical and psychiatric disorders that result in most sleep complaints in older adults
• Sleep — similar to nutrition and physical activity — is an essential part of a healthy lifestyle for all
• A potentially modifiable risk factor for age-associated impairments in mental and physical function

The Gerontological Society of America
November 20, 2015
Current State of OTC Therapeutics for Sleep Disturbance

Types of Sleep Aids
- Prescription drugs
- Herbals and supplements
- Alcohol
- OTC drugs

Prescription Drugs
- Prescription sleep aids, e.g.:
  - Eszopiclone (Lunesta)
  - Ramelteon (Rozerem)
  - Doxepin (Silenor)
  - Suvorexant (Belsomra)
- FDA approved for treatment of insomnia
- DSM-V diagnosis of insomnia disorder requires disturbed sleep 3 or more nights/week for 3+ months
- No limitation on treatment duration

Herbals and Supplements
- Valerian, chamomile, melatonin, etc.
- Herbal labels still cannot say anything about treating specific medical conditions because they are not subject to clinical trials or to the same standards as prescription or OTC drugs
- Example labeling statement: “to promote regular sleep patterns”

Alcohol
- Frequently used as a sleep aid
- Sedative effects may lead to shortening of sleep latency
- Alcohol disrupts nighttime sleep quality and compromises nighttime respiration
- May result in residual daytime effects

OTC Agents
- Doxylamine, diphenhydramine
- FDA approved
- Not for treatment of insomnia
- Indicated for occasional sleeplessness of 2 to 3 nights
Doxylamine – Unisom SleepTabs, Equaline Sleep Aid, Good Sense Sleep Aid, etc.
- H1 antagonist but H1/M1 potency ratio low to moderate
- Pregnancy Category B
- No published placebo-controlled trials supporting efficacy in older adults

Diphenhydramine – Nytol, Sominex, Tylenol PM, Excedrin PM, Advil PM, Unisom SleepGels, ZzzQuil, etc.
- H1 antagonist but H1/M1 potency ratio low to moderate
- Pregnancy Category B
- 1 published crossover study in 20 older insomniacs
  - Decreased only awakenings vs placebo; AEs vs placebo: dry mouth (80% vs 65%), dizziness (25% vs 10%), and headache (20% vs 5%)

Anticholinergics and Dementia

- Higher cumulative anticholinergic use is associated with an increased risk for dementia
- Efforts to increase awareness among health care professionals and older adults about this potential medication-related risk are important to minimize anticholinergic use over time


Appropriate Use of Sleep Medications

- If your sleep difficulty is chronic and impacts how you feel or function during the day then contact you doctor
- If the problem is acute then consult and review your sleep hygiene practices
- Consult with your pharmacist about the potential appropriate use of an OTC sleep aid for your sleep difficulty

Demonstrated Benefits of Improving Sleep

- Improves difficulties with pain
- Augments efficacy of antidepressant therapy
- Prevents incident depression or depression relapse???
- Augments response to anxiolytic therapy
- Improves fatigue
- Decreases (undesirable) napping in elderly patients.

Conclusions

- Efficacy data for OTC sleep aids in general are not available and there are almost none for older adults
- Duration of action of diphenhydramine increases with age
- Safety concerns relate to potential residual effects and anticholinergic side effects
- Many older adults misuse OTC sleep aids, taking them for long periods of time
Pharmacist Perspective on OTC Sleep Aids: Gaps in Therapies and Clinical Practice

- Increase access to health care for consumers/patients
- Provide advice/direction
- Provide education/information
- Coordinate essential health information
- Manage/coordinate OTC sleep aid use with prescription medication dispensing and other pharmacist-provided patient care services
- Perform patient triage and make referrals

2013 Pharmacy Today Over-the-Counter Product Survey

- Pharmacists make an average of 28 OTC product recommendations per week and counsel 27 patients
- On average, 77% of patients purchase the OTC product recommended by the pharmacist
- On average, pharmacists spend 3.6 minutes with patients requesting OTC information
- After counseling patients on OTC products, most pharmacists refer them to another health care professional – Refer 73% of the time

OTC Sleep Recommendations: Pharmacy Today Survey

Sleep Aids (n = 1,256)
- Unisom SleepTabs (doxylamine): 22%
- Unisom SleepGels (diphenhydramine): 21%
- ZzzQuil (diphenhydramine): 7%
- Nytol (diphenhydramine): 6%
- Sominex (diphenhydramine): 5%
- MidNite (herbal): 2%
- Other: 38%

Clinical Assessment of Sleep Health

Assessment of sleep health and use of OTC sleep medications should be part of the routine examination in all patients
- How many hours of sleep do you get, on average?
- Do you have problems falling asleep or staying asleep? How often?
- Do you feel sleepy, drowsy, or tired during the day?
- Do you take OTC medications to help you sleep?
  ** It takes less than 1 minute! **

Investigate Causes of Sleep Disturbances/Insomnia

- Transient 1 wk; Short term 1-3 wks; Chronic more than 3 wks
- Difficulty falling asleep (life stresses, medical illness, anxiety, poor sleep habits)
- Environmental (late night exercise, meals, new surroundings, etc.)
- Caffeine, alcohol
- Medical conditions (pain, GERD, asthma, etc.)
- Medications (Rx and OTC)
- Shift work
- Circadian rhythm disorders: children/adolescents

**Insomnia Guidance: Handbook of Nonprescription Drugs**

- Sleep hygiene practices
- Complementary therapy
  - Melatonin, valerian, others
- Pharmacologic therapy (OTC sleep aids)
  - Diphenhydramine/doxylamine products
  - Combination products with analgesics

**Exclusions for Self-Treatment**

- <12 years of age
- ≥65 years of age
- Pregnancy
- Frequent nocturnal awakenings or early morning awakenings
- Chronic insomnia (>3 weeks)
- Sleep disturbance secondary to psychiatric or general medical disorders

**Therapeutic Options for Occasional Sleeplessness**

- Sleep hygiene practices
- Complementary therapy
  - Melatonin, valerian, others
- Pharmacologic therapy (OTC sleep aids)
  - Diphenhydramine/doxylamine products
  - Combination products with analgesics

**Project Objective**

- To investigate self-reported sleeplessness symptoms and problems among adults (18+ years of age) in the United States, using data from Kantar Health’s National Health and Wellness Survey (NHWS)

**NHWS Method and Sample**

- Data collection
  - Survey administered via the Internet since 2002
  - Data collected during Q1–Q3 2013
- Sample
  - Adults 18+ years of age
  - Sample drawn from the Internet panel maintained by Lightspeed Research and its partners
  - Invitations to participate sent to a sample stratified according to:
    - Gender
    - Age
    - Race
- Results are projected to reflect the total population using known population incidences for key subgroups
  - Weighting variables: gender, age, race/ethnicity, and education
  - From 2012 Current Population Survey (Annual Demographics File) of the U.S. Census Bureau

**Sleeplessness Symptoms Reported by Survey Respondents**

- Self-report regularly experiencing 1 or more sleeplessness symptoms including:
  - Difficulty falling asleep
  - Waking during the night and not being able to get back to sleep
  - Waking up several times during the night
  - Waking up too early (such as before the alarm clock)
  - Poor quality of sleep
- Self-report experienced or diagnosis of “sleep difficulties” and/or “insomnia” (past 12 months)
- Self-report no sleeplessness symptoms, but do report experiencing or diagnosis of “sleep difficulties” and/or “insomnia”
- Self-report no sleeplessness symptoms nor any type of “sleep difficulties”/“insomnia”
- Respondents who report narcolepsy, parasomnia, sleep-disordered breathing/sleep apnea, and/or circadian rhythm disorder excluded from analysis
Population With Sleeplessness Symptoms

- 49% of adults report sleeplessness symptoms
- Among those reporting sleeplessness symptoms:
  - 45% report experiencing or diagnosed sleep difficulties/insomnia
  - 33% report daytime sleepiness symptoms

Current Rx Use Among Adults 65+ With Sleep Difficulties/Insomnia

<table>
<thead>
<tr>
<th>Rx Only</th>
<th>OTC Only</th>
<th>Herbal Only</th>
<th>Rx + OTC</th>
<th>Rx + Herbal</th>
<th>OTC + Herbal</th>
<th>Rx + OTC + Herbal</th>
<th>No Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>12%</td>
<td>10%</td>
<td>2%</td>
<td>2%</td>
<td>3%</td>
<td>-1%</td>
<td>54%</td>
</tr>
<tr>
<td>21%</td>
<td>12%</td>
<td>9%</td>
<td>2%</td>
<td>2%</td>
<td>3%</td>
<td>-1%</td>
<td>49%</td>
</tr>
<tr>
<td>17%</td>
<td>12%</td>
<td>12%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>-1%</td>
<td>51%</td>
</tr>
</tbody>
</table>

Current OTC/Herbal Product Use Among Adults 65+ With Sleep Difficulties/Insomnia

Top 10 OTC/herbal products used:

- Melatonin 34%
- Tylenol products* 19%
- Benadryl/diphenhydramine* 12%
- Equaline Sleep Aid 9%
- Advil PM* 7%
- Valerian 5%
- ZzzQuil* 4%
- Unisom 3%
- Teas 3%

*Contains diphenhydramine or doxylamine

Sleep Treatment Combinations

| Percentage of Adults Reporting Sleep Difficulties/Insomnia by Age in Years |
|-----------------------------|-----------------------------|
| 18-64                      | 65-74                      | 75+ |
| Rx Only                     | OTC Only                    | Herbal Only | Rx + OTC | Rx + Herbal | OTC + Herbal | Rx + OTC + Herbal | No Product |
| 15%                        | 12%                        | 10%         | 2%       | 2%          | 3%           | -1%               | 54%        |
| 21%                        | 12%                        | 9%          | 2%       | 2%          | 3%           | -1%               | 49%        |
| 17%                        | 12%                        | 12%         | 3%       | 3%          | 3%           | -1%               | 51%        |

Drug Facts Label: Diphenhydramine
Beers Criteria

TABLE 1. 2012 AGS BEERS CRITERIA FOR POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULTS

<table>
<thead>
<tr>
<th>Drug Class/Therapeutic Category</th>
<th>Nonadvisable, Avoidable, or Potentially Inappropriate Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticholinergic</td>
<td>Highly anticholinergic preparations with a 30% or greater chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Sedative/hypnotic</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Tranquilizer</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Lithium</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Antiepileptic</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Beta-blocker</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Diuretic</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Corticosteroid</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Anticoagulant</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Anti-Inflammatory Patherogenic</td>
<td>Highly anticholinergic preparations with &gt;30% chance of a 1+ anticholinergic effect</td>
</tr>
<tr>
<td>Antiviral</td>
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</table>


Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults

Days Using OTCs Among Adults Taking DPH/DOX

<table>
<thead>
<tr>
<th>Days per Month</th>
<th>18-64 Years of Age</th>
<th>65-74 Years of Age</th>
<th>75 Years of Age and Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two weeks or less</td>
<td>79% (6.1M)</td>
<td>63% (428K)</td>
<td>53% (225K)</td>
</tr>
<tr>
<td>More than two weeks</td>
<td>21% (1.6M)</td>
<td>37% (247K)</td>
<td>47% (150K)</td>
</tr>
</tbody>
</table>

Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults

Daily Alcohol Use Among Adults With Sleeplessness Using DPH/DOX

<table>
<thead>
<tr>
<th>Condition</th>
<th>18-64 Years of Age</th>
<th>65-74 Years of Age</th>
<th>75 Years of Age and Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afib</td>
<td>1% (61K)</td>
<td>3% (21K)</td>
<td>6% (26K)</td>
</tr>
<tr>
<td>Asthma</td>
<td>11% (820K)</td>
<td>7% (50K)</td>
<td>9% (90K)</td>
</tr>
<tr>
<td>BPH (Enlarged Prostate)*</td>
<td>3% (85K)</td>
<td>28% (43K)</td>
<td>36% (28K)</td>
</tr>
<tr>
<td>Constipation</td>
<td>5% (395K)</td>
<td>6% (40K)</td>
<td>11% (47K)</td>
</tr>
<tr>
<td>COPD</td>
<td>1% (101K)</td>
<td>6% (43K)</td>
<td>6% (25K)</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>1% (69K)</td>
<td>5% (32K)</td>
<td>6% (27K)</td>
</tr>
</tbody>
</table>

*Men only

Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults

Conditions Among Adults With Sleeplessness Who Use DPH/DOX

Anticholinergic Use Among Adults With Sleeplessness Using DPH/DOX

<table>
<thead>
<tr>
<th>Condition</th>
<th>18-64 Years of Age</th>
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Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults

Key Findings

- NHWS data confirm observations from other studies
- Sleeplessness symptoms are very common in U.S. adult population
- Individuals self-report sleep difficulties in different ways—important for health care professionals to discuss with patients:
  - Assess the length of sleep difficulties and refer patients with chronic symptoms for medical followup
- In older adults, off-label use of OTC sleep aids is observed, particularly:
  - With co-existing health conditions
  - Length of therapy use (i.e., >2 weeks)
  - Co-administration with 1+ anticholinergic
  - Co-administration with alcohol
- Opportunity for educating health care professionals on treatment and safety concerns particularly in older adults

Sleep Health and the Appropriate Use of OTC Sleep Aids in Older Adults
Contributions of Pharmacists

- Through pharmacists’ contributions, patients:
  - Will be better informed/educated
  - Will potentially avoid problems associated with these medications (e.g., decreased falls, fewer side effects)
  - Will be less likely to engage in risky medication behaviors
  - Will have better management of their condition
  - Will potentially have an improved quality of life

Gender Differences in Use of OTC Sleep Aids

Steven M. Albert, PhD, Professor and Chair, Department of Behavioral and Community Health Sciences, Graduate School of Public Health, University of Pittsburgh

Gender Differences in Use of OTC Sleep Aids in Older Adults
CONCLUSIONS

- Sleeplessness and insomnia/sx affect over six million estimated elderly people in the US.
- DPH/DDX use is quite common in the elderly, with over one million estimated users, although the anticholinergic properties of these agents are known to have special risks for this vulnerable population.
- Both sexes are at risk; a larger number of older women use these products and they are more susceptible to health issues. Men are more frequent users and more likely to use alcohol, usage patterns that may be outside of label recommendations.
- These data show a clear need for discussion with older adults about their OTC sleep aid use, with special consideration for concurrent alcohol use, frequency of use, and use of other anticholinergic meds that may put them at increased risk for cognitive impairment.

www.geron.org/sleep
Publications and Fact Sheets

Thank You!
Questions and Discussion