E-Health and Insomnia:
An Internet Solution to a Health Workforce Nightmare

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Insomniacs are considered "an epidemic of silent sufferers" who often go undiagnosed even when seeking medical assistance.

VIGNETTES

Alison

34 y/o, single, female

Teacher

Complaint: difficulty falling asleep

SOL: goes to bed, 10:30PM; falls asleep, 1:00AM

Concentration/fatigue difficulties

Anxiety about going to sleep

TST = sleeps 5.5 hours

TIB = 7.5 hours

SE (TST/TIB*100) = 73.3%

Insomnia is complex due to the variety of ways in which it can manifest.

There are four main types of insomnia:

SLEEP PROBLEM	DESCRIPTION
SLEEP ONSET	Unable to fall asleep 30 minutes after turning the lights out once in bed
SLEEP MAINTENANCE	Frequent and/or extended nighttime awakenings which total more than 30 minutes of wakefulness
TERMINAL EARLY AWAKENING	Waking in the morning with less than 6½ hours of sleep
MIXED SLEEP PROBLEMS	Combination of difficulties initiating and sustaining sleep, in which sleep efficiency, sleep time divided by time spent in bed, is less than 85%

Typical definition of insomnia:

1. Subjective complaints of poor sleep;
2. Difficulties initiating and/or maintaining sleep (sleep onset latency and/or wake after sleep onset is greater than 30 minutes; sleep efficiency < 85%);
3. Sleep difficulties => 3 nights/week;
4. Sleep difficulties persisting > 6 months;
5. Subjective report of at least one daytime sequela due to poor sleep: Fatigue, performance impairment, or mood disturbance;
6. Sleep disturbance/daytime sequelae cause significant impairment in social or occupational functioning or marked distress.

DEFINED

PREVALENCE

RELATED RAMIFICATIONS

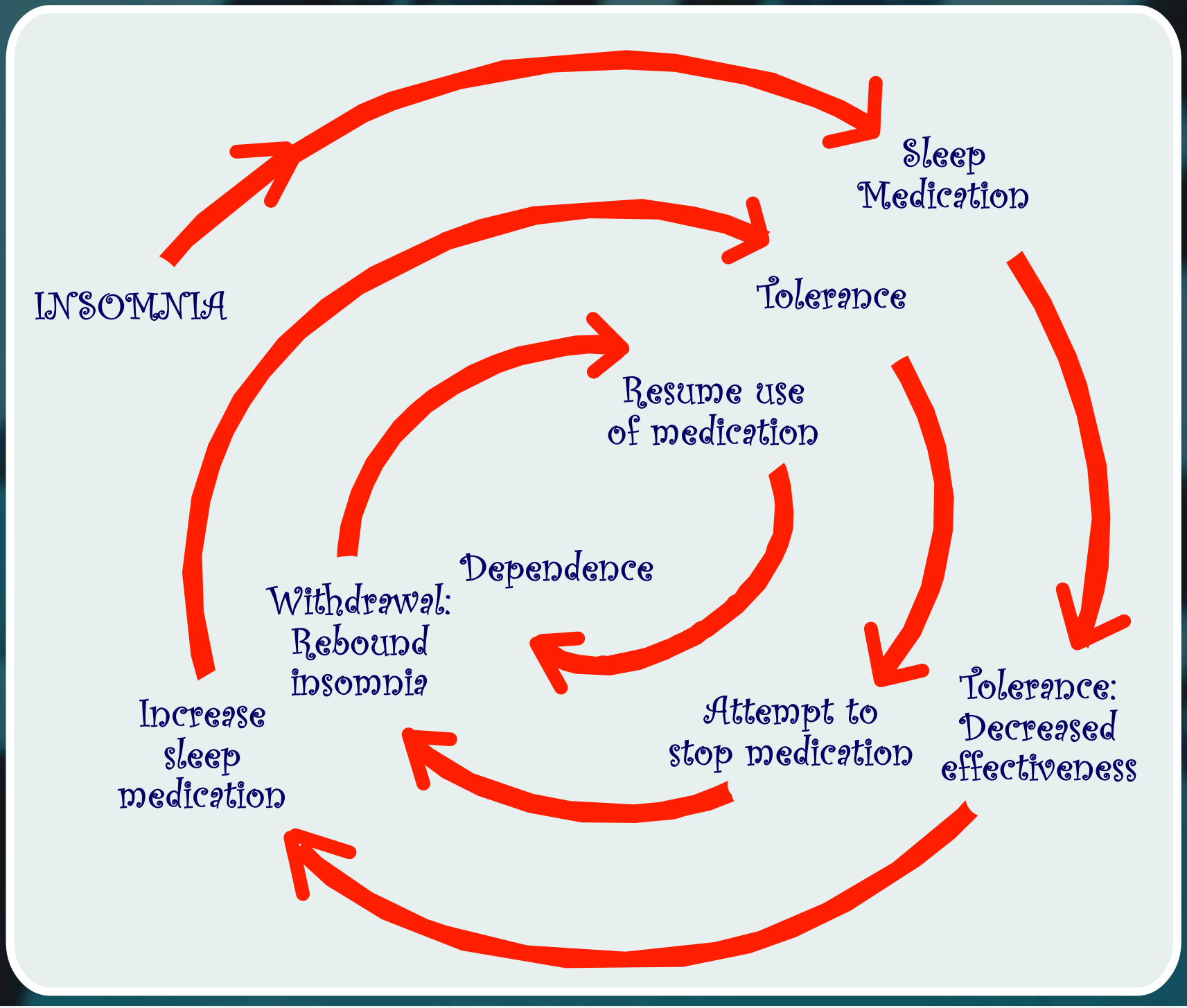
- Most frequent health complaint after pain.
- 30%-48% of the adult population report insomnia symptoms
- 10% to 15% suffer from chronic insomnia
- Almost everybody experiences insomnia at some level at some point in life
- Women are twice as likely as men to have an insomnia diagnosis, and prevalence generally increases with age

Ohayon MM. Epidemiology of insomnia: what we know and what we still need to learn. Sleep Med Rev. 2002;6:97-111.

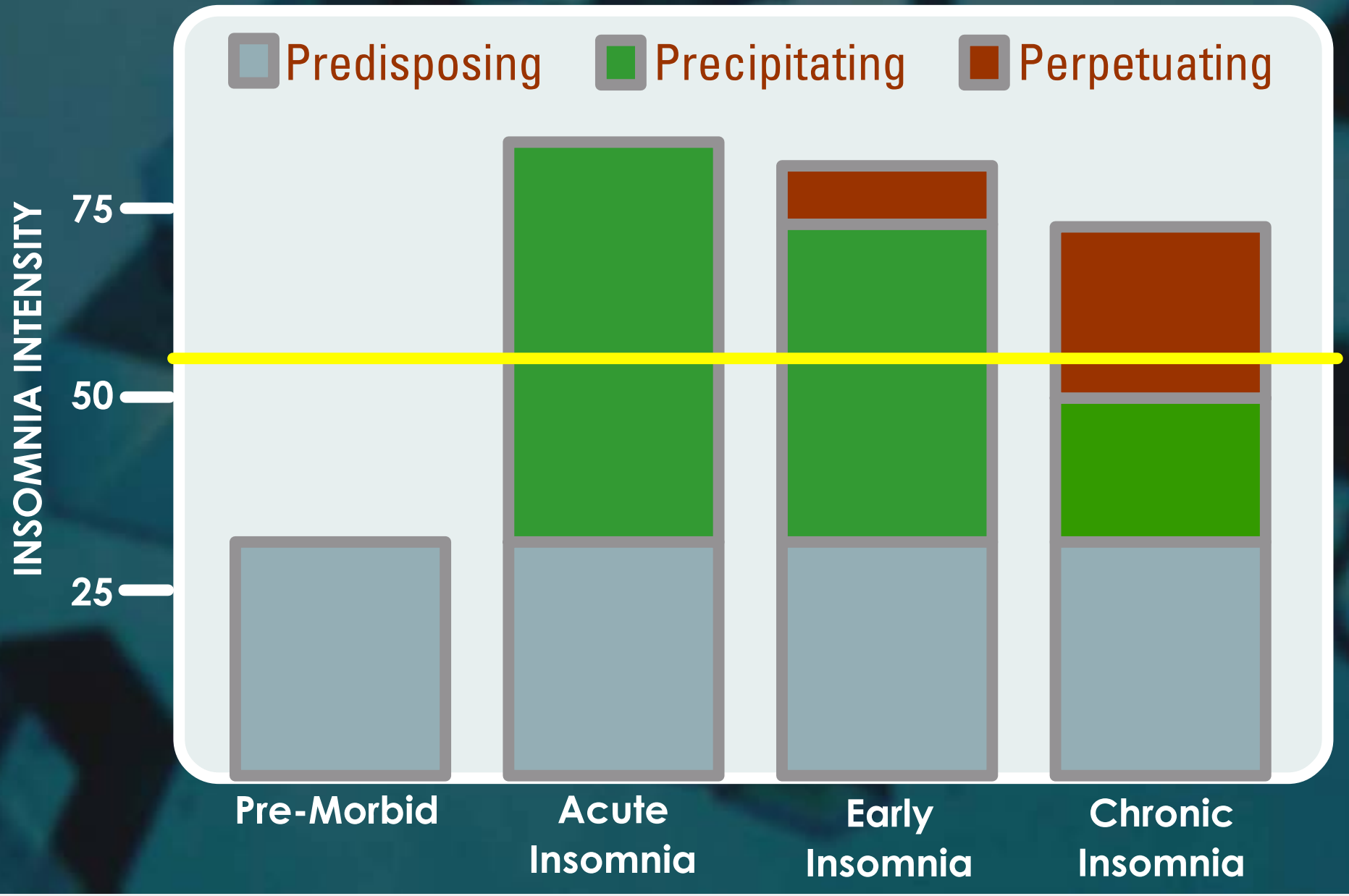
- Estimated annual cost for the treatment of insomnia is $10.9B.
- Insomnia is correlated with increased absenteeism, reduced work capacity, performance errors, and increased risk of accidents at work.
- Costs of reduced productivity due to insomnia is $41 billion. Individuals experiencing insomnia are absent from work 2.8 days more per month, costing $4800/year.
- Significant psychological ramifications, including depression and anxiety, are also strong correlates of insomnia.
- Individuals with insomnia report significantly more health problems then those without sleep difficulties.
- Driving-related accidents are one of the most serious consequences to insomnia.

- Most common treatment for insomnia is pharmacotherapy.
- 15% of people are using prescription or OTC sleep medicines at least a few times each month.
- Sedatives and antidepressants are the most commonly prescribed sleeping medications.
- Found to be an effective, short-term treatment to acute insomnia when compared to placebo-controlled groups.
- Tend to treat symptoms rather than underlying issues.

INSOMNIA.MED-SPIRAL



INSOMNIA.NATURAL HISTORY



IF ONLY THERE WAS SOME EFFECTIVE WAY TO TREAT INSOMNIA WITHOUT THE USE OF MEDICATION.

CORES

Overview

Insomnia defined; Insomnia types; Insomnia prevalence; Risk factors, Insomnia impact (daytime fatigue, pyschological well-being, physical health, economic cost); Setting tx goals; Treatment overview; Treatment appropriateness; Treatment effectiveness.

Sleep Behavior I

Explanation of poor sleep habits; Situational/chronic sleep difficulties; Cycle of chronic insomnia; Introduction of sleep restriction; Explanation of sleep efficiency (SE); Instruction on adjustments to sleep window based on SE.

Sleep Behavior II

Introduction of stimulus control: Going to bed only when sleepy, Leaving bed if unable to sleep, Maintaining regular morning rising time, Using bed only for sleep, No napping.

Sleep Thoughts

Faulty thinking; Relationship between thinking patterns and emotions; Contribution of thought patterns to sleeplessness; Cognitive restructuring; Keeping realistic expectations; Revising misconceptions about insomnia; Eliminating catastrophizing; Reducing sleep emphasis; Developing tolerance for sleep loss effects; Dealing with setbacks.

Sleep Education

Sleep hygiene guidelines; Avoidance of stimulants; Diet; Environment; Exercise.

Relapse Prevention

Identifying high-risk situations; Relapse prevention techniques; Further consolidation of therapeutic gains; Review of sleep behavior techniques; Sleep medication; Maintaining sleep program techniques, including restricted sleep window.

Sleep Restriction:

Method for consolidating sleep and improving sleep efficiency

Sleep Efficiency:

$$\frac{\text{Total Sleep Time (TST)}}{\text{Total Time In Bed (TIB)}} \times 100 = \text{Sleep Efficiency (SE)}$$

DIARY

$$\frac{\text{Total Sleep Time (TST)}}{\text{Total Time In Bed (TIB)}} \times 100 = \text{Sleep Efficiency (SE)}$$

There are three main steps to sleep restriction:

a. Collect information by filling out Sleep Diaries

b. Set a Sleep Window based on this information

c. Set an Arising Time

DIARY

STIMULUS CONTROL RULES

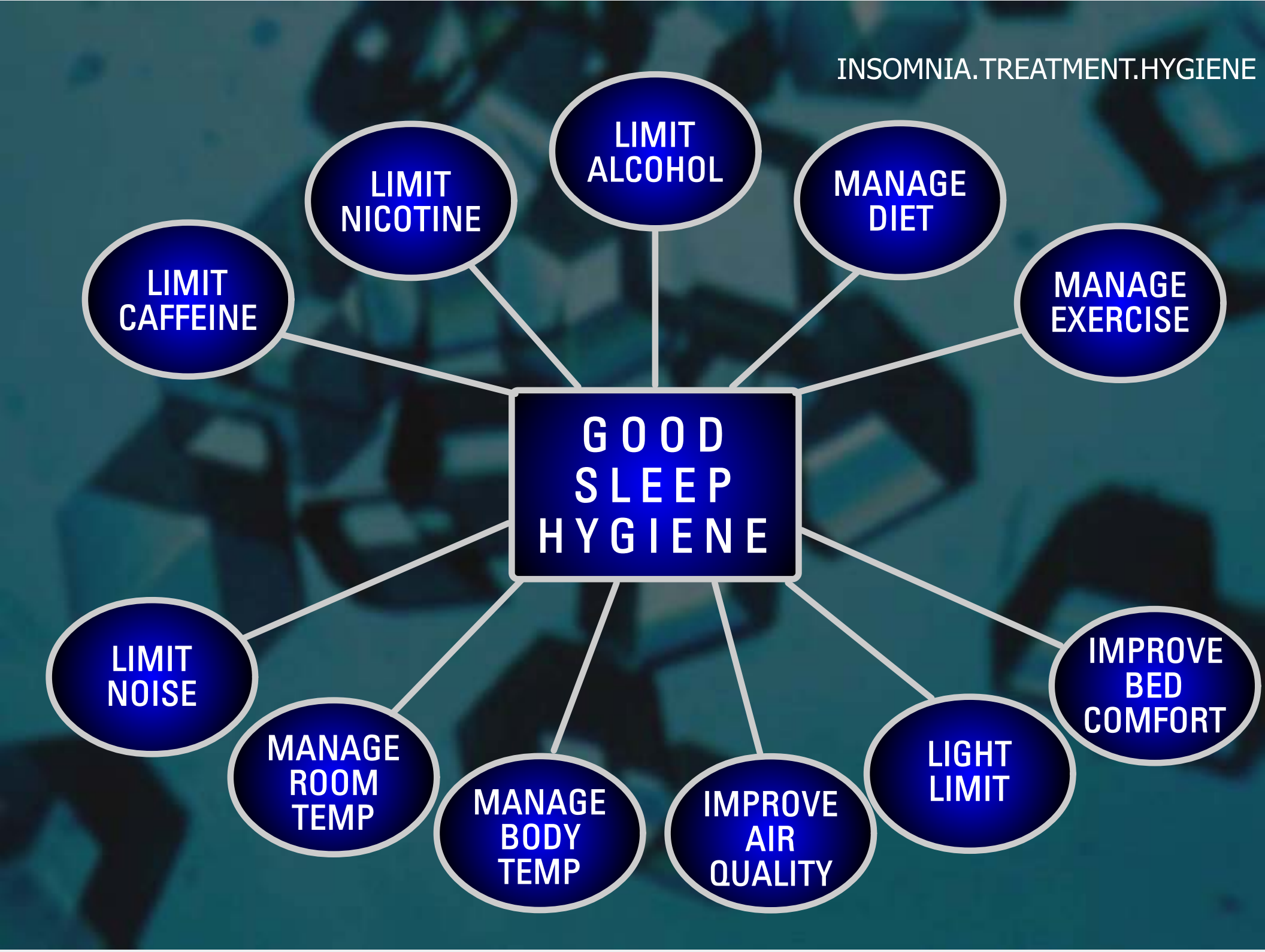
1. Go to bed only when sleepy
2. If you cannot sleep, get out of bed
3. Maintain a regular arising time
4. Do not nap
5. Reserve your bed for sleep only
6. Unwind before bedtime
7. Use a pre-sleep routine before bed

Cognitive Therapy:

A psychotherapeutic method designed to change a person's beliefs, expectations, appraisals, and attributions.

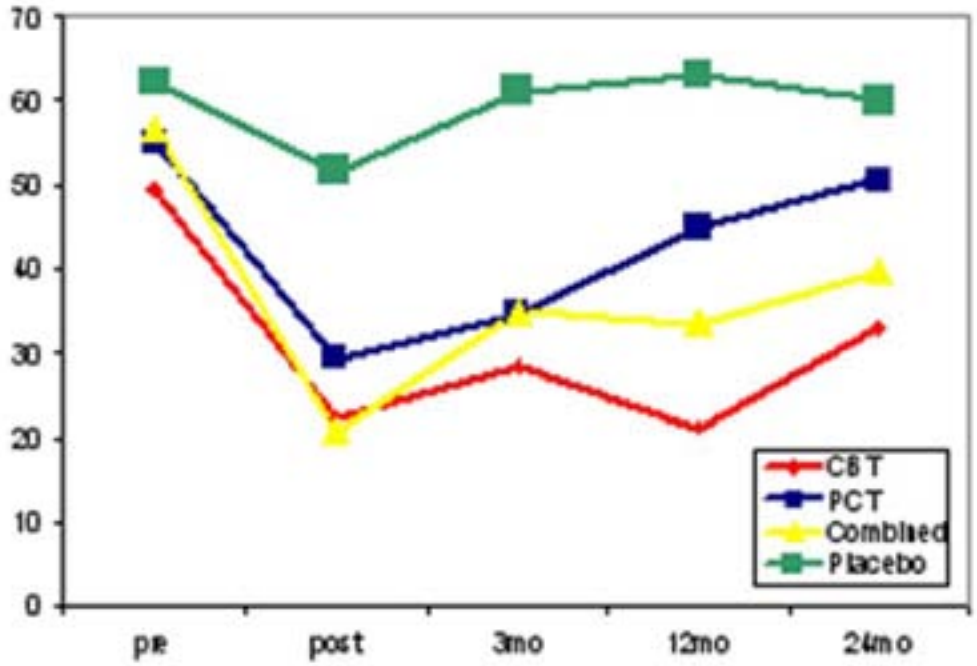
For Insomnia:

Seek to change sleep expectations, perceived causes and consequences of insomnia, and beliefs about sleep-promoting practices.


INSOMNIA.TREATMENT.HYGIENE
GOOD SLEEP HYGIENE
LIMIT CAFFEINE
LIMIT NICOTINE
LIMIT ALCOHOL
MANAGE DIET
MANAGE EXERCISE
LIMIT NOISE
MANAGE ROOM TEMP
MANAGE BODY TEMP
IMPROVE AIR QUALITY
LIGHT LIMIT
IMPROVE BED COMFORT

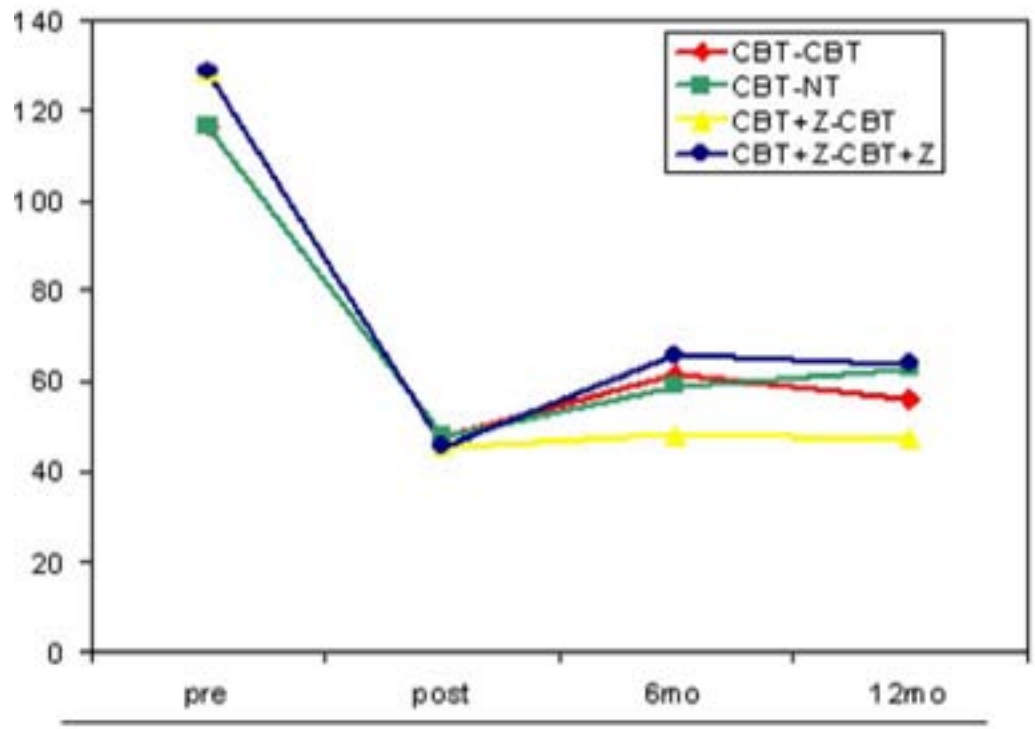
Outcome Studies

- Meta-analyses have confirmed the reliability and durability of cognitive and behavioral techniques in treating insomnia.
- 70%-80% of insomnia patients benefited from psychological interventions.
- CBT is one of the most effective treatments for insomnia.
- Comparing CBT and pharmacological treatments has shown that CBT lead to better long-term clinical gains and was rated as "more effective and satisfying."



CBT indicates cognitive-behavior therapy; PCT, pharmacotherapy (Temazepam)

Adopted from Morin et al., 1999. Shows how four treatments impacted the average time participants were awake in the middle of the night. 78 adults, 55+, with primary insomnia.



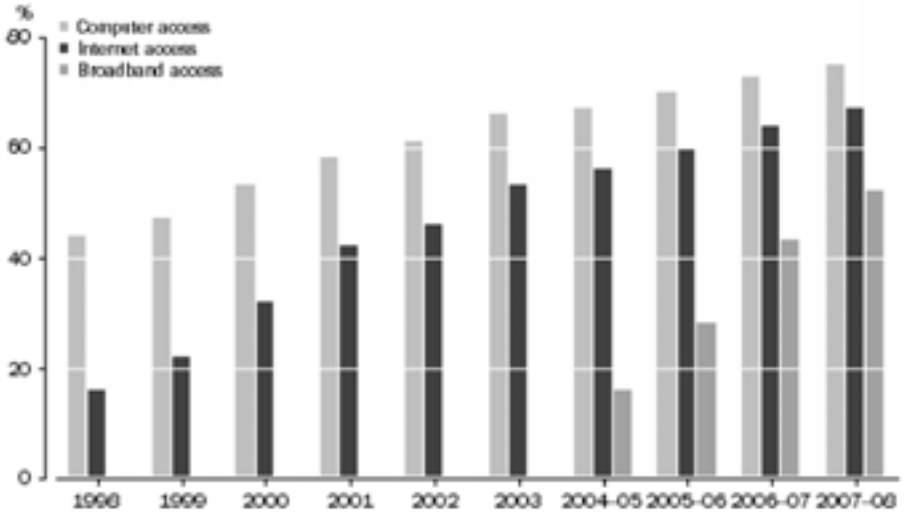
CBT indicates cognitive -behavior therapy; NT is no treatment; CBT+Z is CBT + zolpidem

Adopted from Morin et al., 2009. Shows how four treatments impacted the average time participants were awake in the middle of the night. 160 adults with chronic insomnia.

- There is an obvious and growing need for insomnia treatment.
- There are approximately 1,100 accredited sleep centers in US.
- However:
  1. There are only ~115 specialists certified in Beh Sleep Med.
  2. Most accredited sleep centers do not have clinicians who specialize in psychologically-based insomnia treatment.
  3. There are limited formal training opportunities.
  4. Insurance companies do not typically provide coverage for behavioral treatment for insomnia, making it unlikely that CBT for insomnia could become part of standard practice.
- It is expected that the demand for experts in treatment of insomnia will continue to grow.

People using the Internet, in 2007-08, in Australia:

- 67% of households had home Internet access.
- 75% of households had access to a computer.
- 52% of households had broadband.



Using Internet to search for health and medical information:

- 113 million US adults have searched for health related info online
- Mental health is one of the most frequently searched topics on the web

Australian Bureau of Statistics: 8146.0 - Household Use of Information Technology, Australia, 2007-08

INTERNET INTERVENTIONS:

- behavioral treatments
- highly structured
- semi-self guided
- based on effective face-to-face treatment
- personalized and tailored to user
- interactive
- makes extensive use of graphics, animations, audio, and possibly video; and
- provides follow-up and feedback

INTERNETINTERVENTIONS.INTHELIT

Review
Ritterband et al., 2003

Hands On Help
Marks et al., 2007

Obesity
Saperstein, Atkinson, & Gold, 2007)

Cochrane Review
Murray, Burns, See, Lai, & Nazareth, 2005

Physical Activity
van den Berg, Schoones, & Vliet Vlieland, 2007

Depression and Anxiety
Griffiths & Christensen, 2007

Pediatrics
Stinson, Wilson, Gill, Yamada, & Holt, 2009

Alcohol and Tobacco Use
Bewick et al., 2008

TraumaticSstress
Benight, Ruzek, & Waldrep, 2008

Cardiac Disease
Kuhl, Sears, & Conti, 2006

Meta-Analyses
Barak, Hen, Boniel-Nissim, & Shapira, 2008
Spek et al., 2007
Wantland, Portillo, Holzemer, Laughter, & McGhee, 2004)

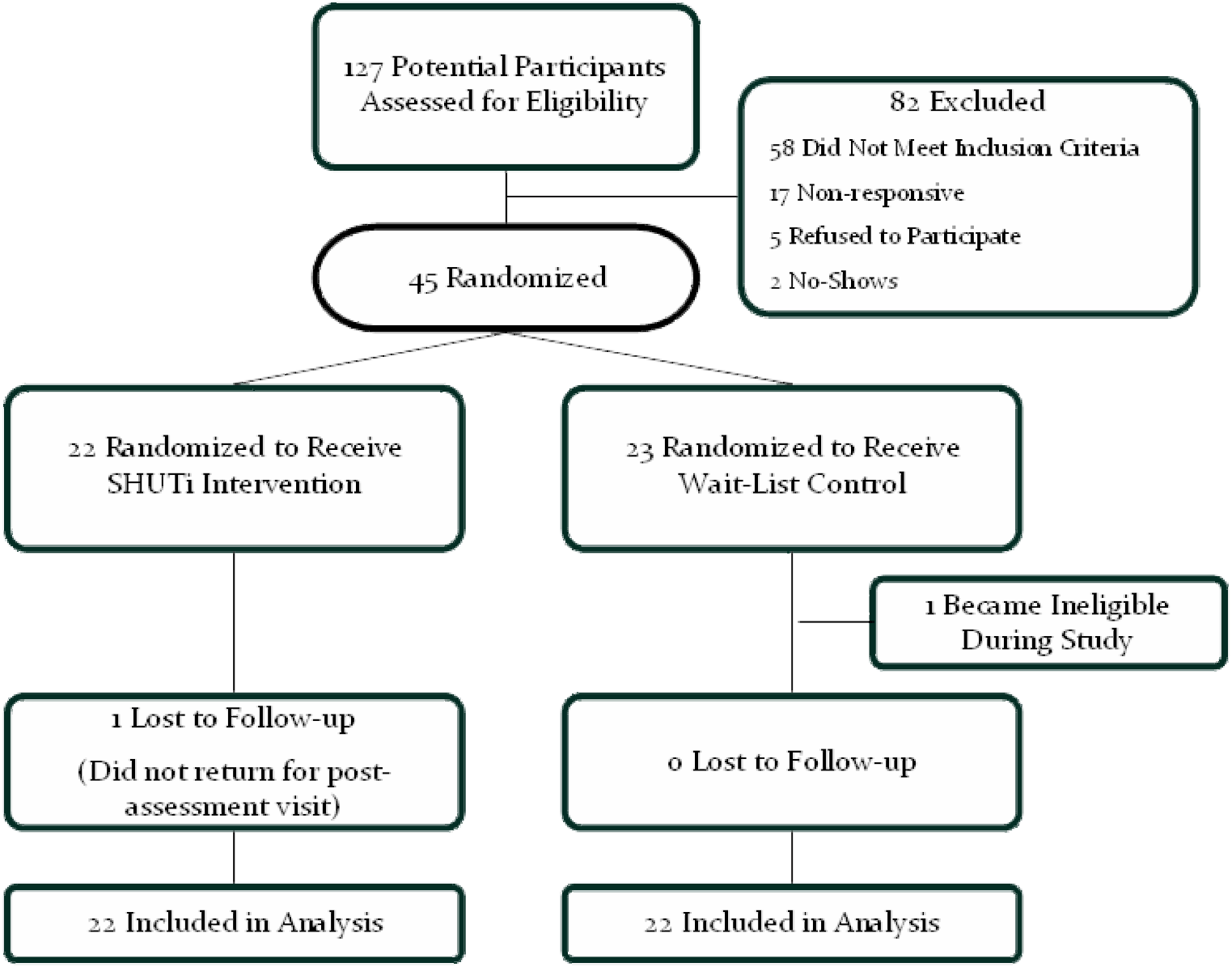
Potential benefits of Internet interventions:

- Reduced inconvenience of scheduling appointments, missing work/school, traveling to/from clinician's office
- Improved convenience in receiving treatment in own home
- Lack of skilled professionals in close proximity no longer a problem
- Patients may be more willing to seek treatment for problems in which they might otherwise be reluctant to receive help
- Educational and treatment information can be disseminated quickly
- Promote greater depth of knowledge/understanding because information can be presented in rich detail
- Total time of treatment may be reduced
- May improve patient compliance
- Treatment efficacy could be enhanced
- Financial costs of treatment may be reduced

SHUTi


SHUTi.net
Sleep Healthy Using The Internet:
A web program to help you sleep better.
Username:
Password:
ENTER
Need Invite?
Problems
FAQ
Learn About Program
Contact Us
Links

SHUTi.CONSORT



Descriptives:

77% Female

~45 years old

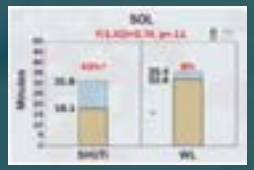
16.59 years of education

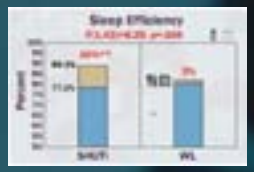
Very comfortable with the Internet

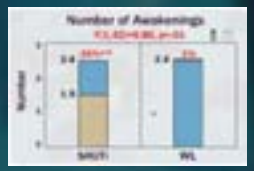
Sleep difficulties for >10 years

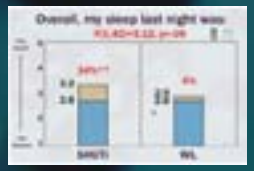
Sleep problems >5 nights/week

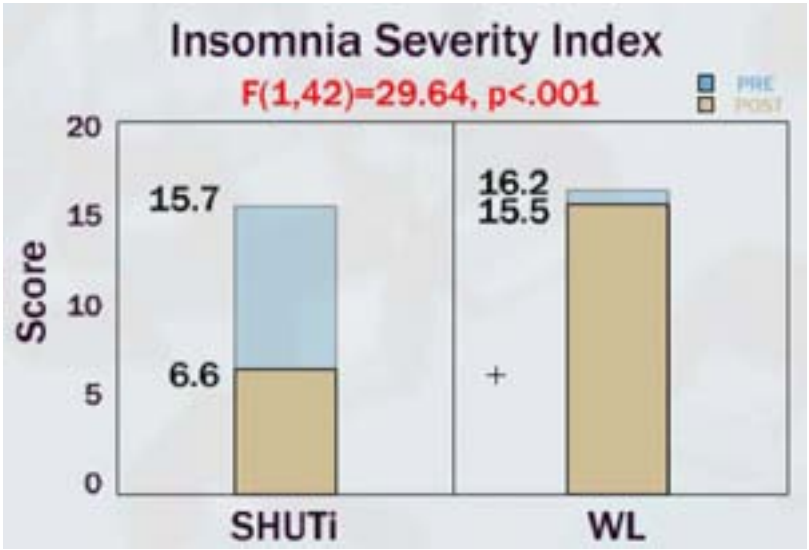
SHUTi.RESULTS.PRIMARY











ISI Total score ranges from 0-28
0-7 = No clinically significant insomnia
8-14 = Subthreshold insomnia
15-21 = Clinical insomnia (moderate severity)
22-28 = Clinical insomnia (severe)

Baseline:
No participant in “No clinically significant insomnia” category

Post:
73% of those who received SHUTi fell into “No clinically significant insomnia” category
0% of those who did not receive the intervention.

Other Significant Findings:

- *Knowledge gain*
- *Reductions in:*
  - *Dysfunctional beliefs*
  - *Depressive affect*
  - *Anxiety*
  - *Fatigue*

Limitations

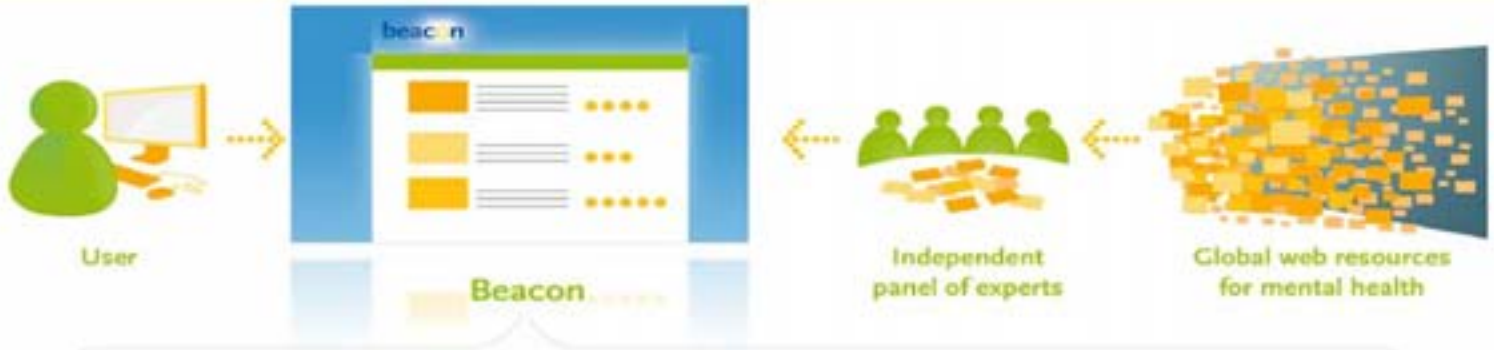
- Small, homogenous sample
- Primary insomnia only
- Low attrition rate (4% at post-assessment)
- WL control group

Future directions

- Larger RCT with national sample
- Recruit for comorbid insomnia
- Different patient populations (cancer, PTSD)
- Compare to Patient Education group

beacon

Welcome to Beacon



Beacon is an online resource that provides users free and anonymous access to the best of the internet's Mental Health related websites. An independent panel of experts including doctors and psychologists categorise, review and rate sites and then publish their findings and reviews for the users of Beacon.

Registered users

Username

Password

forgotten your password

Login

Not registered?

Register now

Registered users gain full access to site content

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Web Resources

http://knol.google.com/k/rachel-manber/insomnia/
http://www.sleepeducation.com/
http://www.sleepfoundation.org/article/sleep-related-problems/insomnia-and-sleep
http://www.nhlbi.nih.gov/health/public/sleep/

Books

Morin, CM & Espie, CA. (2003). *Insomnia: A clinical guide to assessment and treatment*. New York: Kluwer Academic.

Morin, CM. (1994). *Insomnia: Psychological assessment and management*. New York: Guilford Press.

Morin CM. Relief from Insomnia: Getting the Sleep of Your Dreams. New York: Doubleday; 1996.