

A woman with dark hair is lying in bed, sleeping peacefully with her eyes closed. She is wearing a light-colored top. The background is a soft, dreamy night sky with a gradient from light blue to purple, featuring several bright, out-of-focus stars. The overall mood is calm and serene.

# **Sleeping Under the Stars:**

**Eye-opening results from a randomized control trial using  
an online insomnia intervention.**

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# Agenda

1. Insomnia Background
2. HealthMedia Book of Business Data
3. Clinical Study Methodology
4. Outcomes

# Prevalence of Insomnia

One third of Americans are affected



- Prevalence increases with age
- More frequent among women
- 58% of participants who enrolled in HealthMedia Disease Management programs reported sleep problems
- As many as 90% receive no treatment
  - Lack of specialized services
  - Treatment often poorly managed in primary care

# Impact of Insomnia on Physical Health

Comparisons between good sleepers and those with insomnia



- Higher rates of disability
- More days of limited or no activity
- Twice the number of days in bed,
- Hospitalized twice as frequently.
- More physician office visits
- Greater use of medication
- Increased risk for falls and more frequent nursing home placement among elderly

# Insomnia Comorbidity: Mental Health



- 40% of patients with mental health disorders have comorbid insomnia
- Insomnia independently increases the risk of developing a new psychiatric disorder, especially depression (4 times the risk)
- Insomnia is the most common residual symptom in depression - 50% still have it despite successful mood treatment - and is associated with poorer treatment outcomes and higher rates of relapse .
- When treated for alcohol abuse, patients with insomnia twice as likely to relapse .
- Treating insomnia separately can improve recovery from mental health disorders

# Sleep Difficulties Inflate Medical Costs

1. Nearly **\$2800 higher direct per-patient costs** for elderly with insomnia
2. **25-50% higher** mean total health-service costs
3. Sleep difficulties lead to **additional \$13.8 billion** of primary care visits
4. **\$2 billion spent** on prescription sleep medications

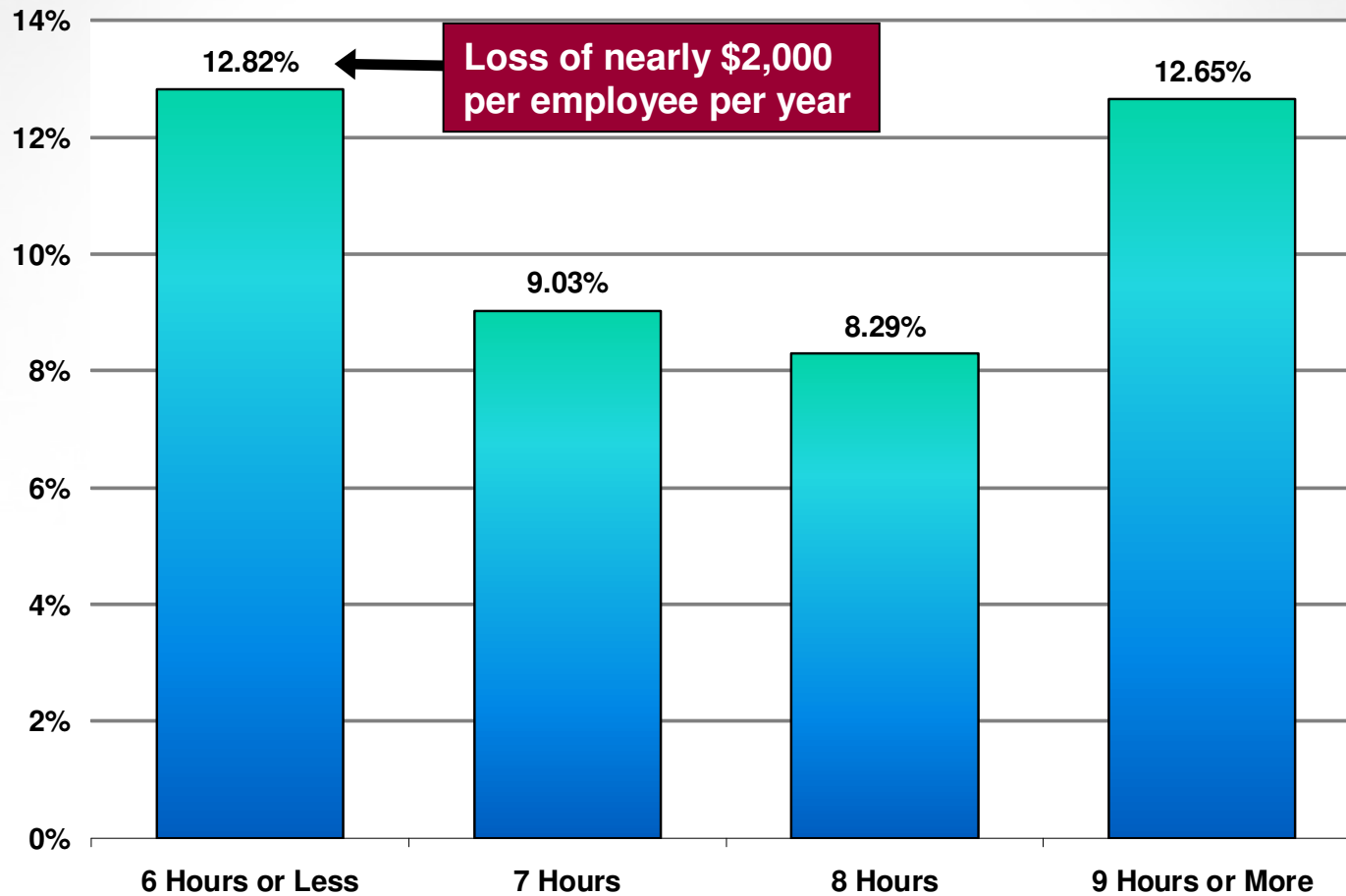
# Losing Time and Money in the Workplace



1. Those with severe insomnia **miss work twice as often** as good sleepers
2. Their rate of serious work errors is **2.5 times higher**
3. They have a **significantly higher rate** of work-related accidents

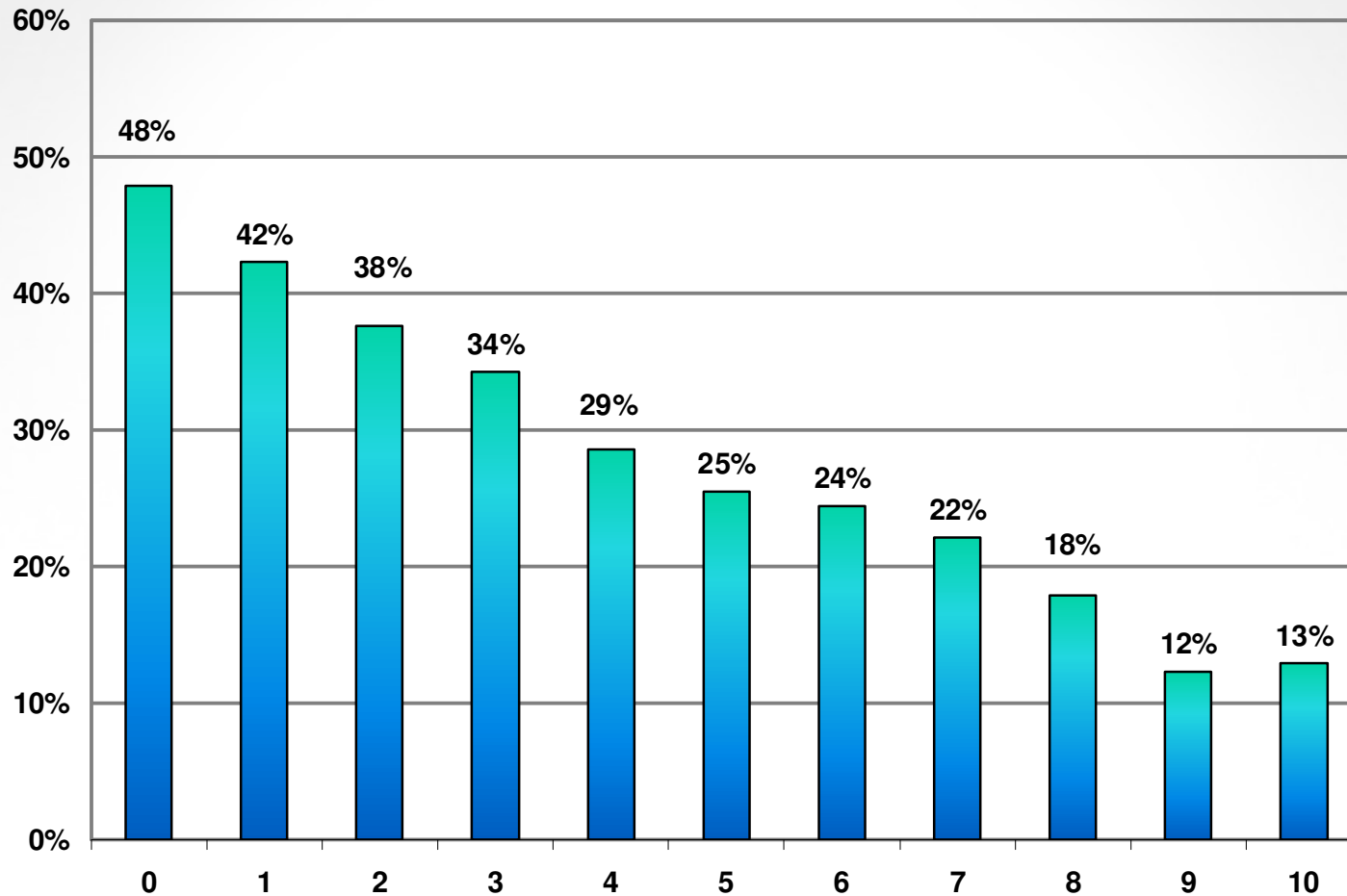
# Sleep and Productivity Impairment

WPAI Data from Succeed



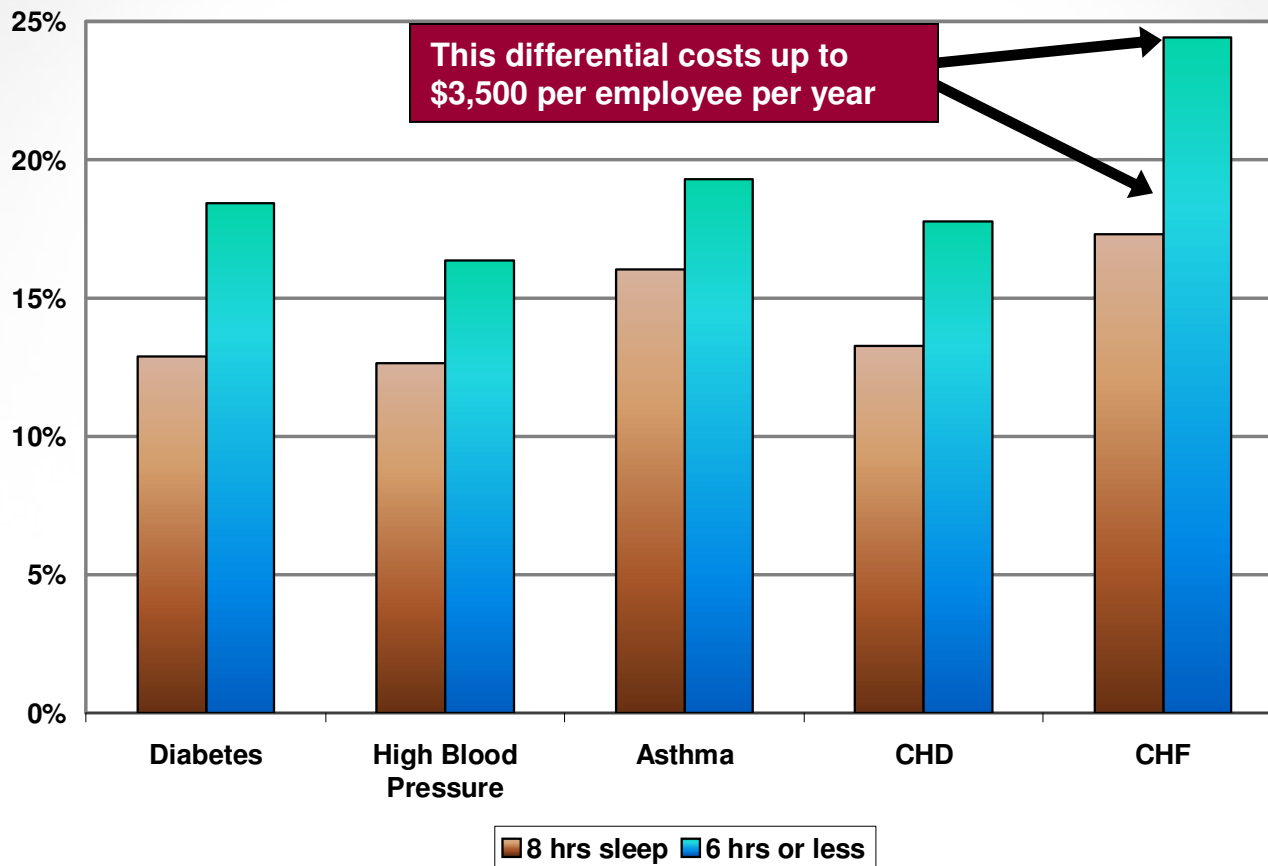
# Sleep and Productivity Impairment

WPAI Scores by Quality of Sleep Ratings



# Insomnia Comorbidity and Productivity

WPAI Data from Succeed



Productivity Impairment

# Sleep Medications: Pros and Cons

- FDA-approved medications most useful in acute/transient insomnia, where immediate relief is principal concern, particularly if unstable medical and/or psychiatric conditions present
- Contraindications include
  - Adverse side effects
  - Medication interactions
  - Tolerance and/or abuse/dependence
  - Caution in elderly and patients with history of substance abuse
  - **Cost: One month's supply costs as much as \$100**



# CBT-I: Pros and Cons



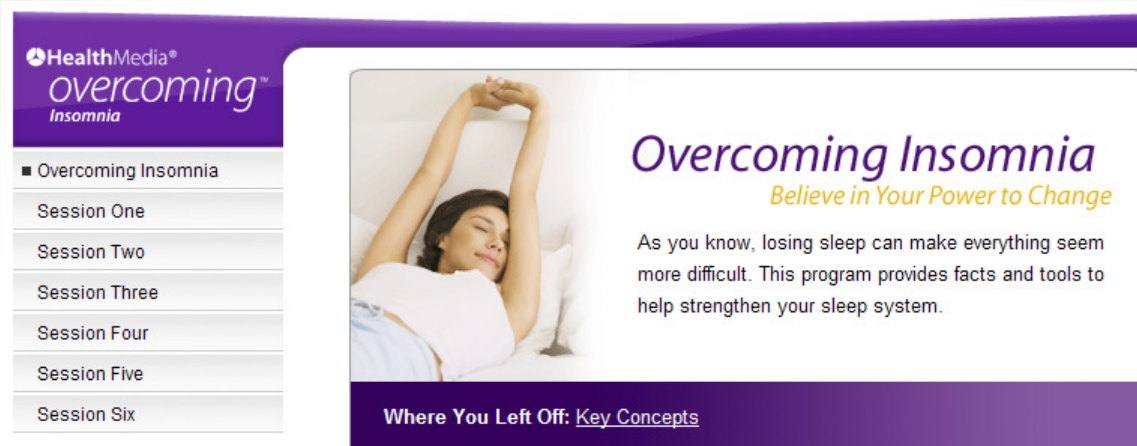
- CBT-I most helpful with chronic insomnia, where long-term sleep improvements are the principal concern
- Indications include: previous failed trials of hypnotics, evidence of poor sleep habits and/or misconceptions about sleep
- CBT-I typically well-tolerated – fatigue most common side effect
- Contraindicated with unstable medical/psychiatric disorders or when treatment components may exacerbate other disorders (e.g., bipolar, seizure, sleep apnea)
- **Biggest drawback: trained CBT-I clinicians in short supply outside of teaching hospitals and large metropolitan areas**

## Why Online Interventions?

- Allow mass screening and remediation
- Scalability, cost, confidentiality, and efficacy
- Delivered the same way every time
- Available 24/7
- Help for those who don't have access to specialty treatments such as CBT-I
- Used as adjunct to/replacement for sleep medications
- Used to complement other services

# Insomnia Management

## On-line Web Coaching



HealthMedia®  
*overcoming*  
Insomnia

- Overcoming Insomnia
  - Session One
  - Session Two
  - Session Three
  - Session Four
  - Session Five
  - Session Six

**Overcoming Insomnia**  
*Believe in Your Power to Change*

As you know, losing sleep can make everything seem more difficult. This program provides facts and tools to help strengthen your sleep system.

Where You Left Off: [Key Concepts](#)

- **11,817 Users**
- **Both genders** - 72% women, 28% men
- **All ages** - 45% over 50
- **Not receiving help** - 82%

# Overcoming™ Insomnia

72% of the users have had sleep problems a year or more

<b>Less than 2 weeks</b>	<b>3%</b>
<b>2 weeks - 1 month</b>	<b>3%</b>
<b>1 month - 6 months</b>	<b>10%</b>
<b>6 months - 1 year</b>	<b>11%</b>
<b>Over a year</b>	<b>54%</b>
<b>All my life</b>	<b>18%</b>

**20%**

Have fallen asleep while driving

# Sleep Improvement

6 month outcomes



HealthMedia® Overcoming™ Insomnia

- **29-minute** increase in average sleep time
- **26%** reduction in fatigue levels
- **16%** reduction in anxiety levels
- **38%** decrease in difficulty falling asleep
- **36%** decrease in difficulty of staying asleep ratings
- **26%** increase in the confidence to manage insomnia
- **\$3,016 productivity savings** per year per participant

# Randomized Clinical Study

# Study Methodology

## Length of Study (8 weeks)

- Baseline (Initial & 2 weeks)
- Program (6 weeks)

## Participants

- 100 – 150 Healthy Male/Female
- 18 – 65 years of age, randomized into two cells

## Measures

- Weekly Sleep logs and questionnaires
- Access to Overcoming Insomnia program for six weeks
- End of study post-questionnaire

# Study Questionnaires

- Pittsburgh Sleep Quality Index Questionnaire
- Weekly Sleep Log
- Post-use Questionnaire

# **Pittsburgh Sleep Quality Index Questionnaire Results (PSQI)**

# Pittsburgh Sleep Quality Index Questionnaire (PSQI)

The PSQI indicates several sleep quality indexes which include the following:

- Subjective Sleep Quality
- Sleep Latency
- Sleep Duration
- Habitual Sleep Efficiency
- Sleep Disturbances
- Sleep Medications
- Daytime Dysfunction
- Overall Global PSQI Score

# Overall PSQI Results

(Total n= 121)

	CONTROL CELL (n=62)				HEALTH MEDIA CELL (n=59)			
	% Change from Baseline				% Change from Baseline			
	Week 2	Week 4	Week 6	Week 8	Week 2	Week 4	Week 6	Week 8
Subjective Sleep Quality	-4.5	1.12	0.6	2.2	4.8	15.8	21.0	37.8
Sleep Latency	-9.3	-6.2	-3.6	-6.2	3.8	-10.3	-20.7	-28.0
Sleep Duration	9.0	9.0	9.4	5.4	3.9	15.7	27.5	32.2
Habitual Sleep Efficiency	16.2	24.3	26.4	18.9	4.2	-14.0	-17.3	-38.8
Sleep Disturbances	-2.3	-7.0	-6.7	-12.9	-4.1	-15.6	-13.8	-17.4
Sleep Medications	-60.0	-20.0	1.6	-20.0	-50.8	-50.0	-87.5	-60.4
Daytime Dysfunction	-13.5	-14.6	-11.1	-18.7	-10.7	-21.1	-39.0	-45.8
Global PSQI Score	-4.7	-5.2	-4.9	-7.3	-2.8	-16.1	-26.3	-38.4



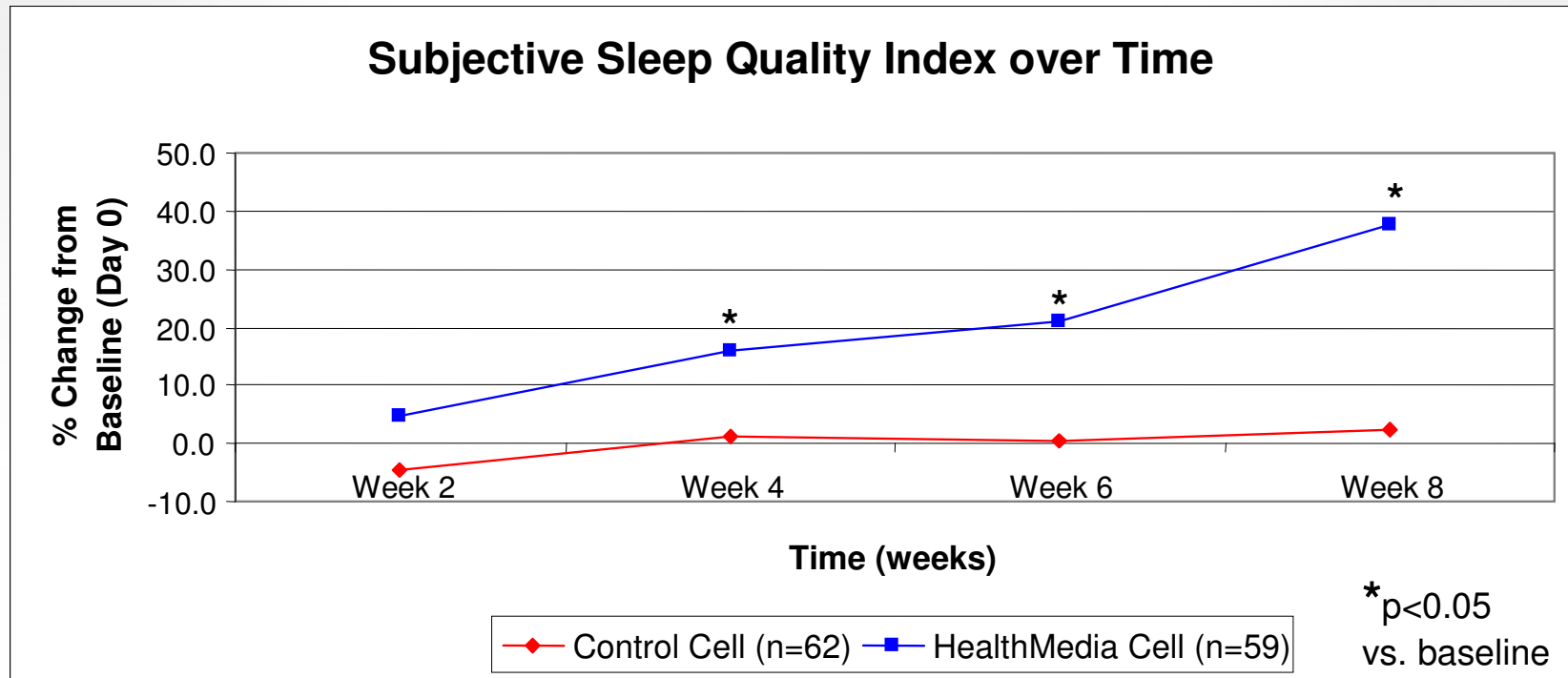
Statistically Significant (p<0.05)



Statistically Significant (p<0.10)

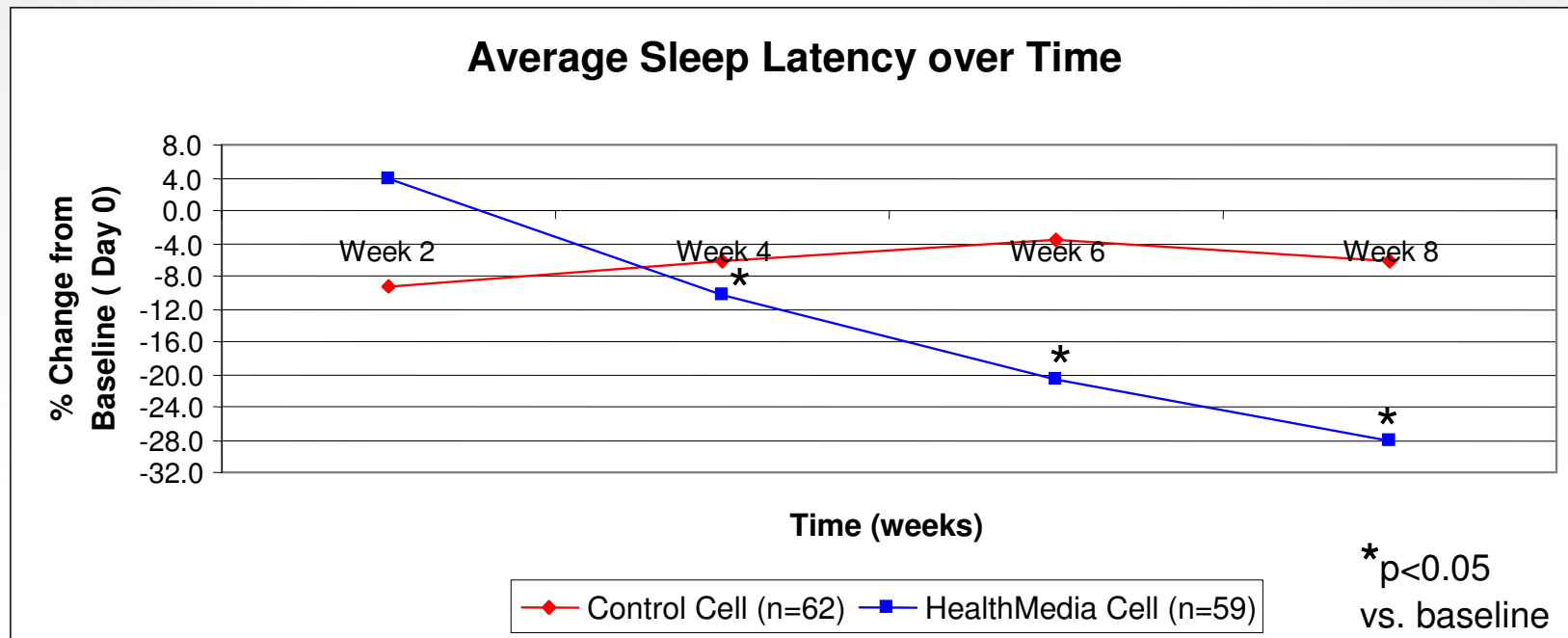
# Subjective Sleep Quality

(Total n = 121)



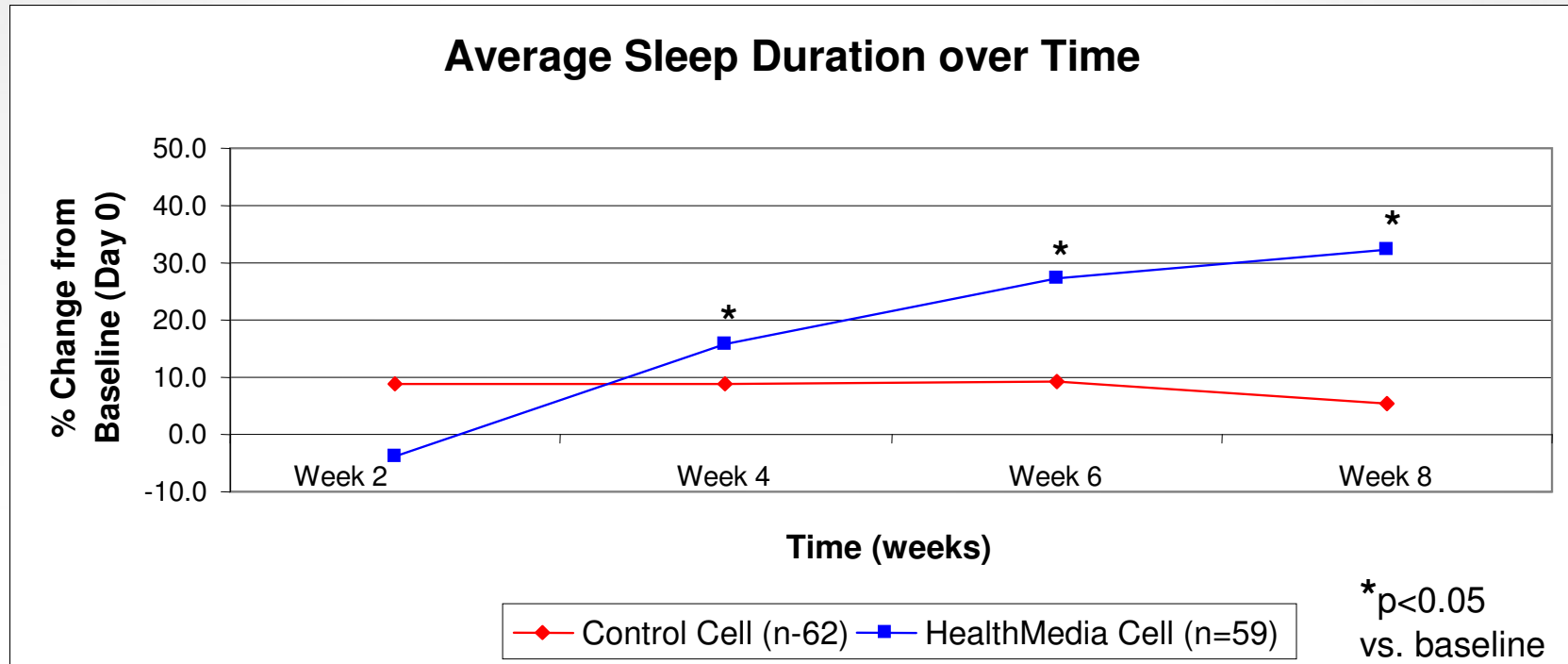
# Sleep Latency

(Total n = 121)



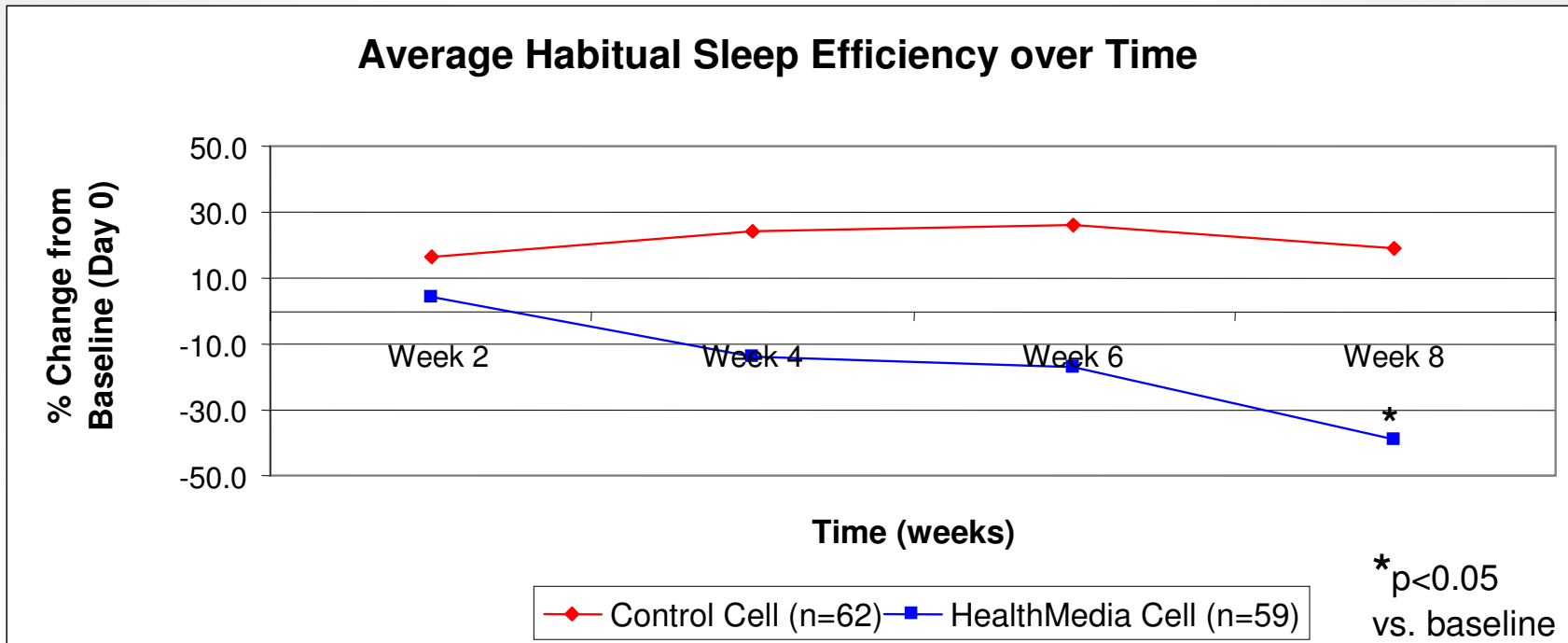
# Sleep Duration

(Total n = 121)



# Habitual Sleep Efficiency

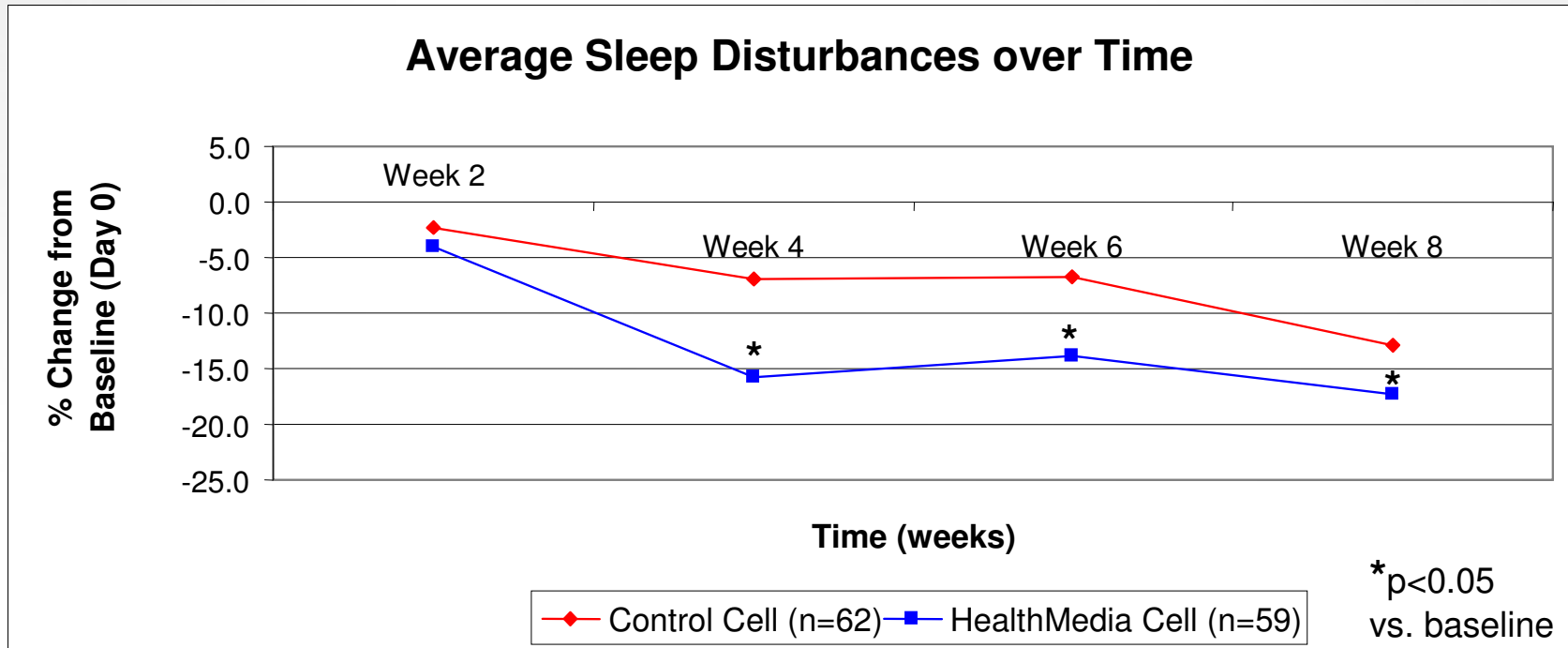
(Total n = 121)



Habitual Sleep Efficiency is a calculation based on the number of hours slept/ divided by the number of hours spent in bed (Bad Sleep habits decreased)

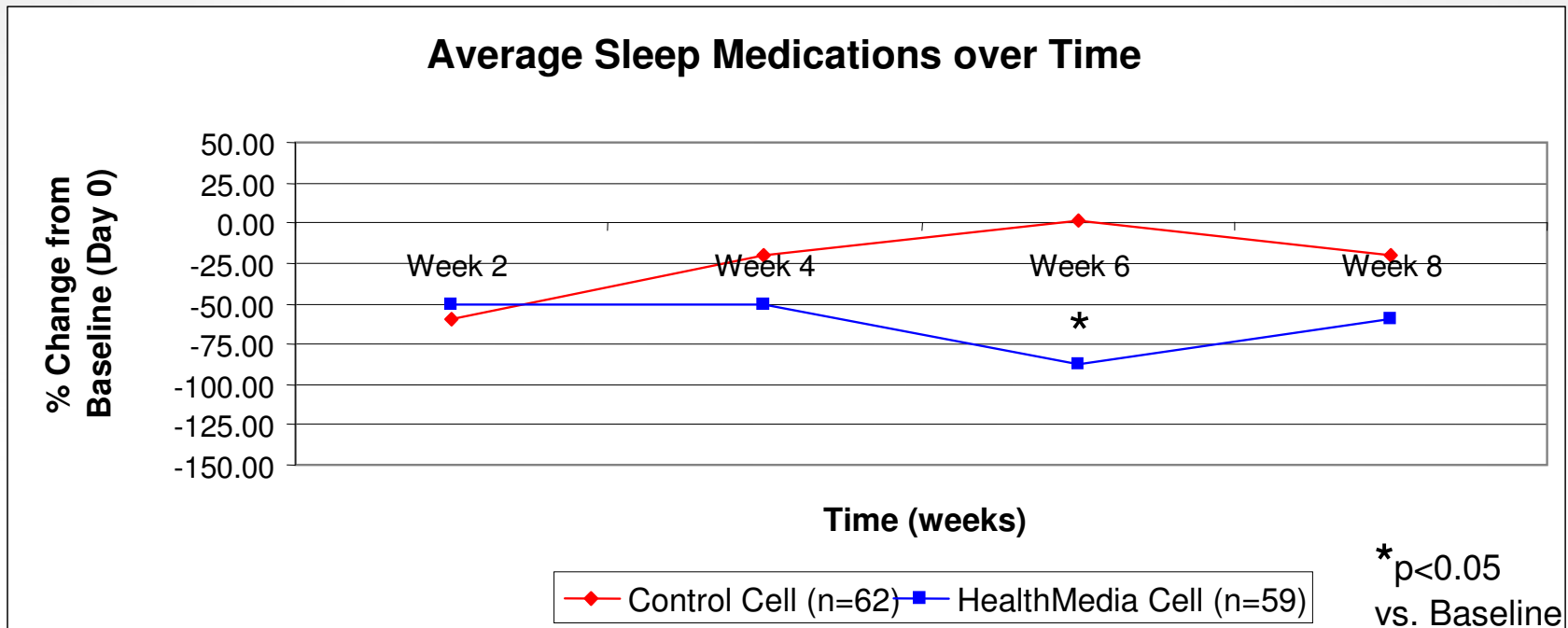
# Sleep Disturbances

(Total n = 121)



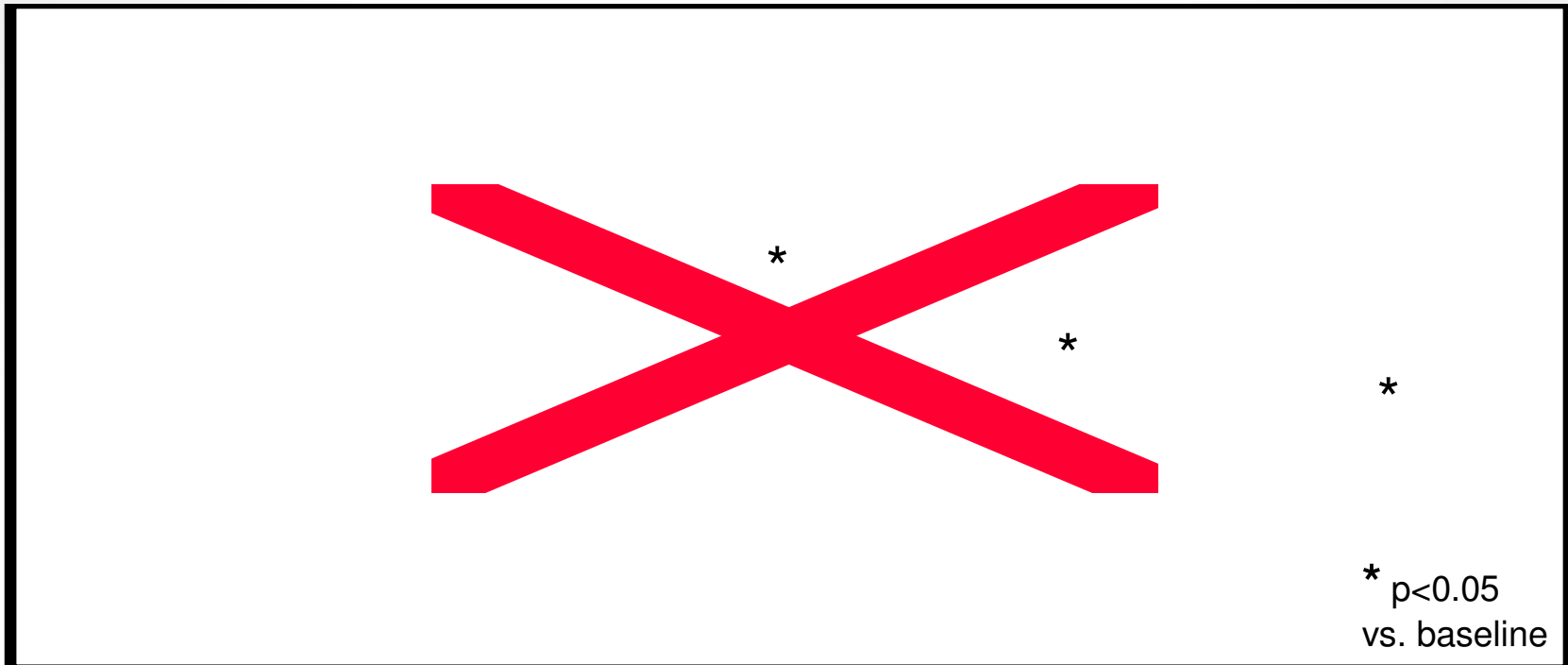
# Sleep Medications

(Total n = 121)



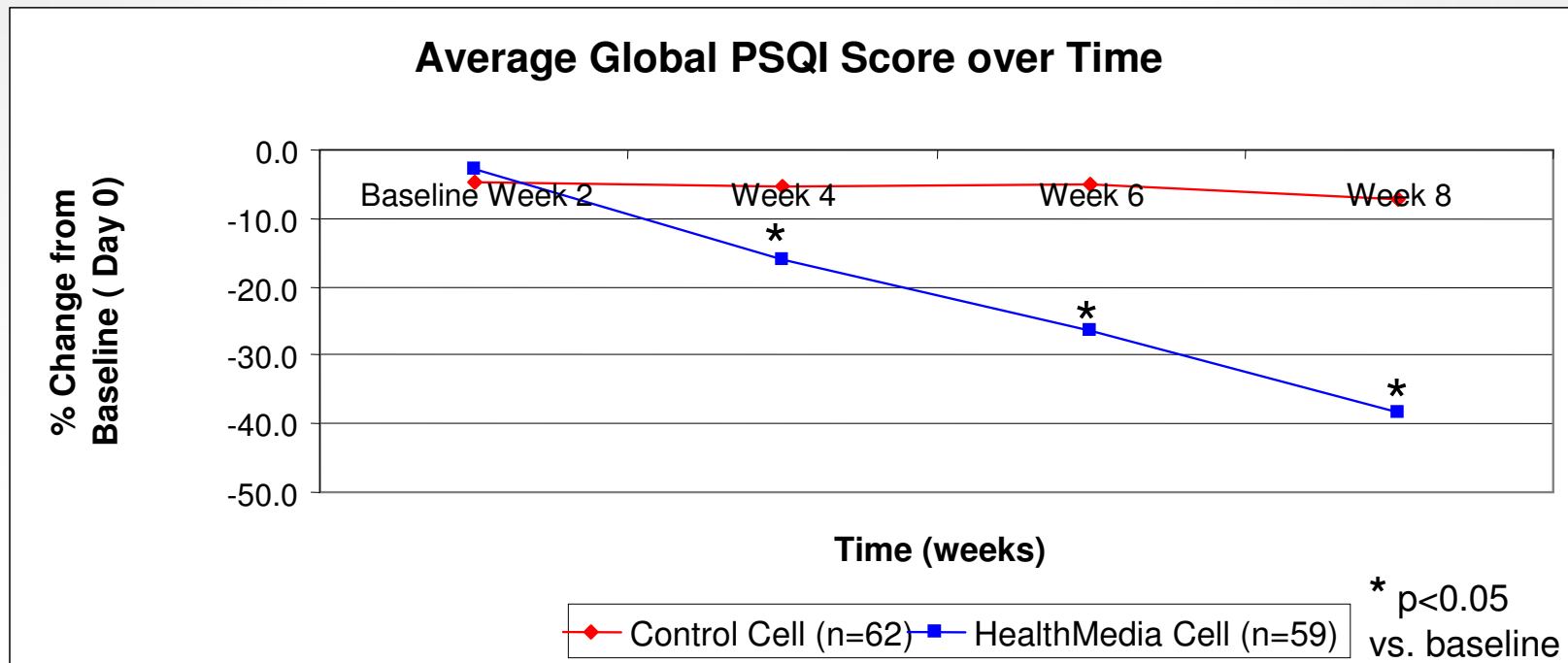
# Daytime Dysfunction

(Total n = 121)

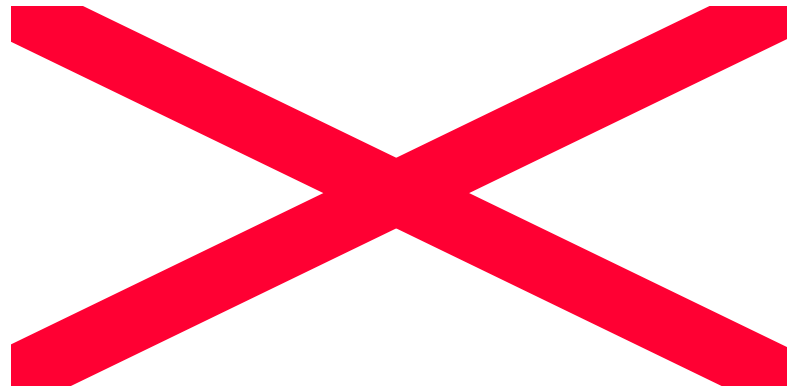


# Global PSQI Score

(Total n = 121)



# “ Good” Sleepers” vs. “Bad Sleepers” based on Global PSQI Scoring



“Bad” or poor sleepers defined as an PSQI global score that is greater than 5.0

# Post-Use Questionnaire Data

## Question/Statement Asked and % Responses Based on 7-point Likert Scaling

Question	% of Total Responses		
	Disagree	Neutral	Agree
A: Program Liking	8%	4%	89%
B: Program Usefulness	2%	6%	92%
C: Program Ease Of Use	13%	0%	87%
D: Program Helpful In Achieving Better Sleep	6%	13%	81%
E: Use Program Again	11%	11%	78%
F: Keep Using Program If I Could	17%	15%	68%
G: Recommend Program To A Friend	6%	15%	80%
H: Time & Effort Required Is Reasonable For The Benefit	15%	6%	79%
I: Amount of Time & Effort Was About What I Expected	19%	8%	74%

# Verbatim Comments

# Comments

- The content and suggestions were excellent.
- It was very helpful and interesting.
- Had many interesting facts that I did not know before I took this.
- Easy to use, program is excellent.
- The program was very helpful in gaining understanding with sleep habits and how to correct them.
- I enjoyed the program and I believe it was helpful
- Tips in Health Media were helpful
- Logging my sleep pattern really helped me, understand my habits and quality of sleep
- This program gives very good tips and guidelines on how to get a better night's sleep and get to the bottom of the reasons

# Acknowledgements

**Diana Friscia (Johnson & Johnson)**  
**Janet Nikolovski (Johnson & Johnson)**

**Jan Brayan (HealthMedia)**  
**Chris McMahon (HealthMedia)**

# Welcome to the revolution.

A way to change behavior using the web. Proven and Guaranteed.



Revolutionizing Behavior Change

