



Adelaide Institute *for* **Sleep Health**
Improving health through the *science of sleep.*

Australia Sleeps: Or does it? And how does it?

Professor Leon Lack

Impact of Sleep on Life

- Consequences of insufficient sleep
- Consequences of sleep disorders
 - ✓ Insomnia
 - ✓ Sleep Apnea
- Economic burden
 - ✓ \$5 billion for Australia per year
 - ✓ \$6,000 per sleep disordered person per year

How common are these problems? Sleep Survey - 2010

- Sponsored by the Sleep Health Foundation
- Roy Morgan Research organization conducted it.
- Telephone survey using experienced interviewers, professional sampling techniques, representative sample covering all ages (14 years to 65+) in all states, urban and regional.
- Sample of 1512
- Response rate of 72%
- Sampling error of 2%

Frequent Difficulties (3 or more times/week) with Aspects of Sleep

Table 1. Percentages of Overall sleep difficulties experienced a “few times a week or more” (Often) by Gender and Age.
(* = $p < .05$, ** = $p < .001$)

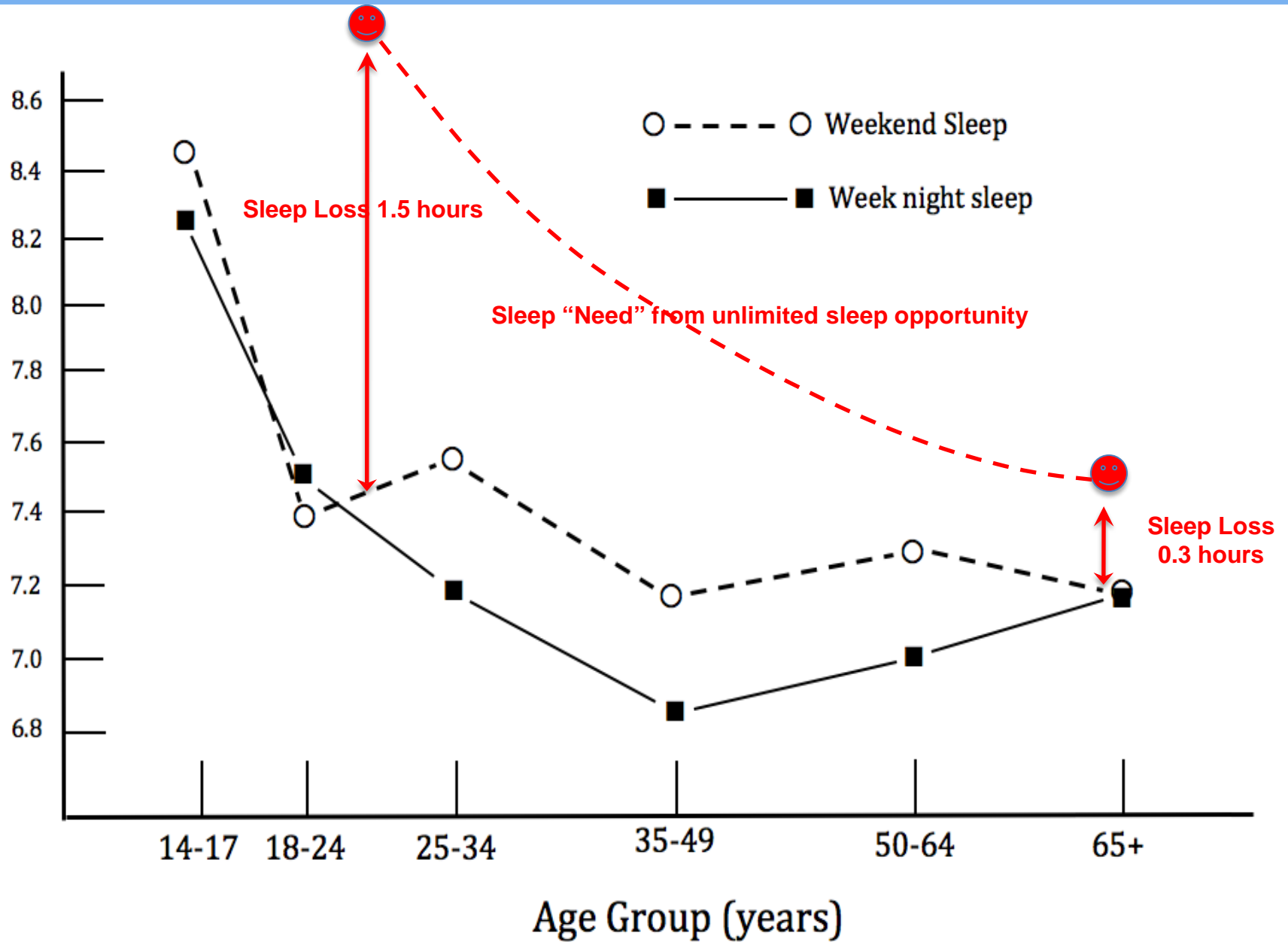
Sleeping Difficulty Often	Overall	Male	Female	14-24	25-34	35-49	50-64	65+
Difficulty Falling Asleep	20	17	22*	33*	18	20	15	13
Waking a Lot during night	35	30	39**	27	33	43**	32	40**
Waking up too Early	25	23	28**	22	20	29*	26	28
Waking feeling Un-refreshed	35	32	38*	42**	42**	40**	29	19
Did not get Adequate Sleep	24	18	29**	28**	25*	25*	21	19

Hours Slept

Table 3. Average amount of sleep reported (hours) for Weeknights and Weekends by Gender and Age.

	Overall	Males	Females	14-17	18-24	25-34	35-49	50-64	65+
Week Nights	7.16	7.15	7.17	8.24**	7.49*	7.18	6.86	7.01	7.14*
Week Ends	7.37**	7.37	7.37	8.45**	7.37	7.54	7.19	7.29	7.14
Overall	7.22	7.21	7.23	8.30	7.46	7.28	6.95	7.09	7.14

Hours Slept



○ - - - ○ Weekend Sleep

■ - - - ■ Week night sleep

Sleep Loss 1.5 hours

Sleep "Need" from unlimited sleep opportunity

Sleep Loss 0.3 hours

Age Group (years)

Daytime Consequences

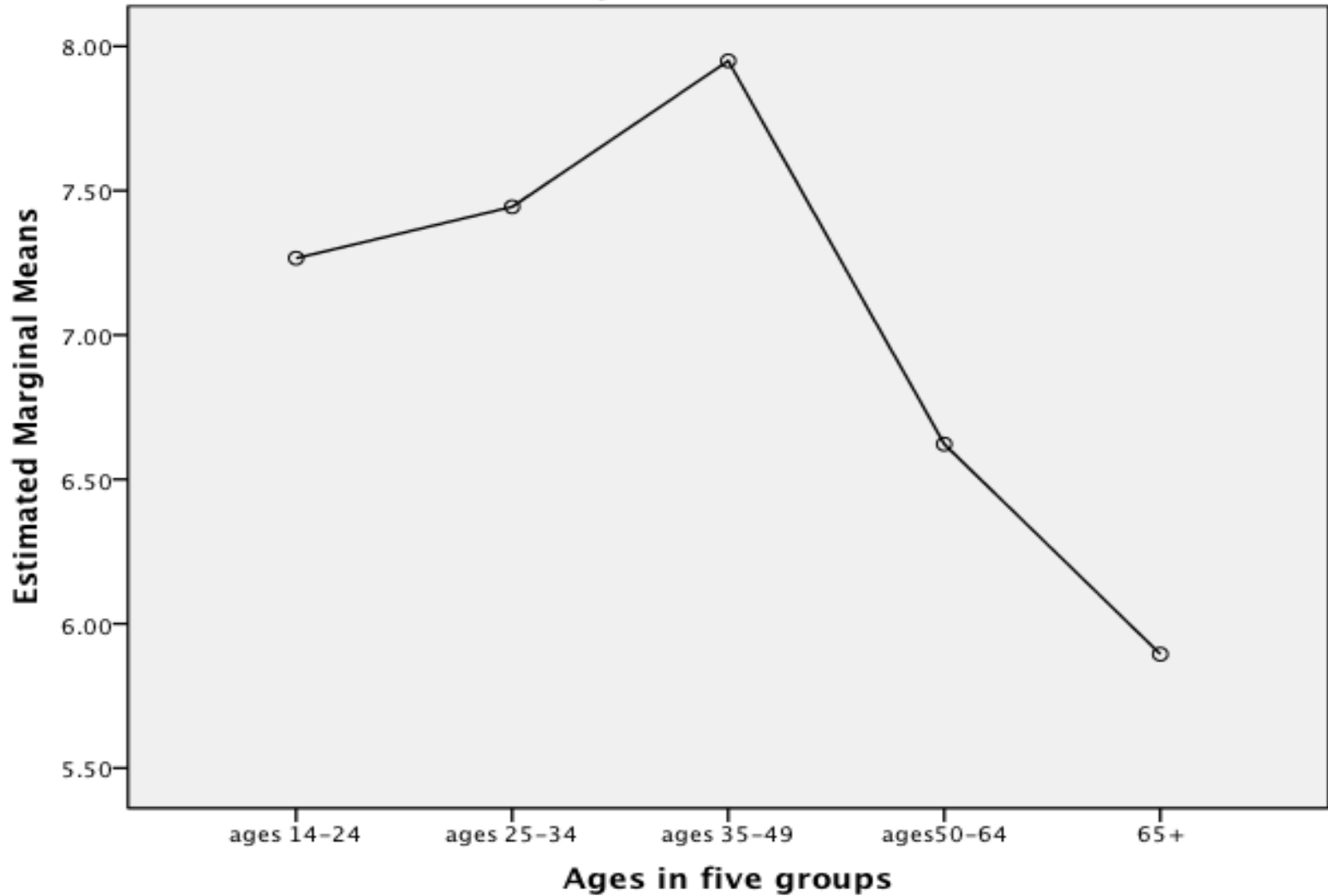
Table 4. Problems of daytime functioning and mood. Prevalence of experiencing them at least a few times a week or more. (* = $p < .05$, ** = $p < .001$)

Daytime Problem	Overall	Males	Females	14-24	25-34	35-49	50-64	65+
Interfering Sleepiness	19.0	15.7	22.3*	25.6*	21.1*	22.4*	13.6	11.4
Fatigue or Exhaustion	23.5	20.0	27.0**	25.9**	27.7**	29.1**	18.8	14.2
Irritable or Moody	18.8	18.2	19.3	19.1*	27.9**	22.9**	12.9	9.8

Insomnia Prevalence Estimate

- Combining difficulties with sleep onset and maintenance, un-refreshing sleep and daytime consequences of sleepiness, fatigue, irritability allowed an estimate of the Insomnia Severity Index where $ISI > 14$ indicates clinical insomnia.
- Estimated prevalence for total population was 7%
- How did estimated ISI vary with age?

Estimated Marginal Means of ISItotal



**Prescribed
Sleep Meds**

3.5	2.5	1.8	5.8**	5.5**
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How is Insomnia Treated by Medical Professionals?

- Recent study of 2,400 cases of insomnia in general medical practice in Sydney.
- Medication prescribed for 95% of cases.
- Mainly benzodiazepines.
- However, none of these drugs are problem free.

- Long Acting Hypnotics (eg. diazepam, flunitrazepam, nitrazepam, amitriptyline, SSRIs?)

- *Advantage:*

- less withdrawal rebound

- *Disadvantage:*

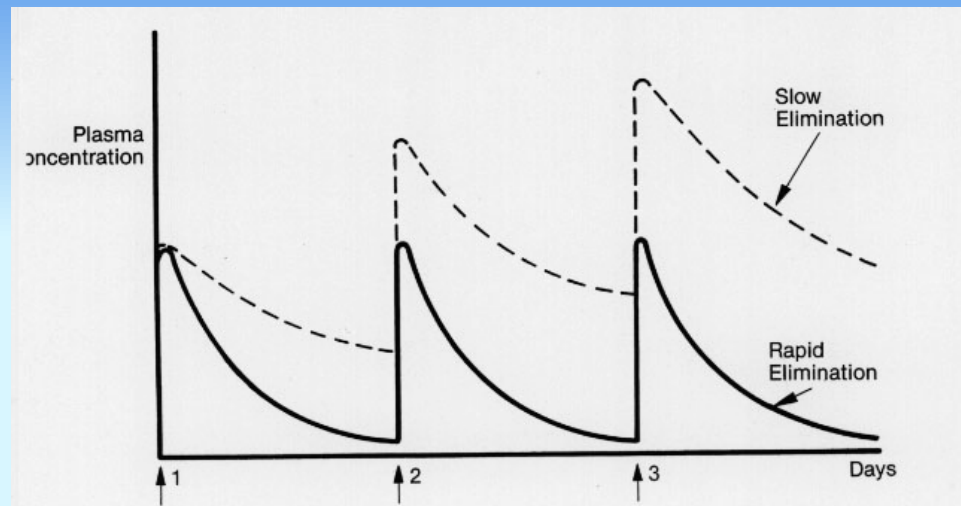
- daytime sedation, memory & motor impairment (exacerbates effect of aging)

- Short Acting Hypnotics

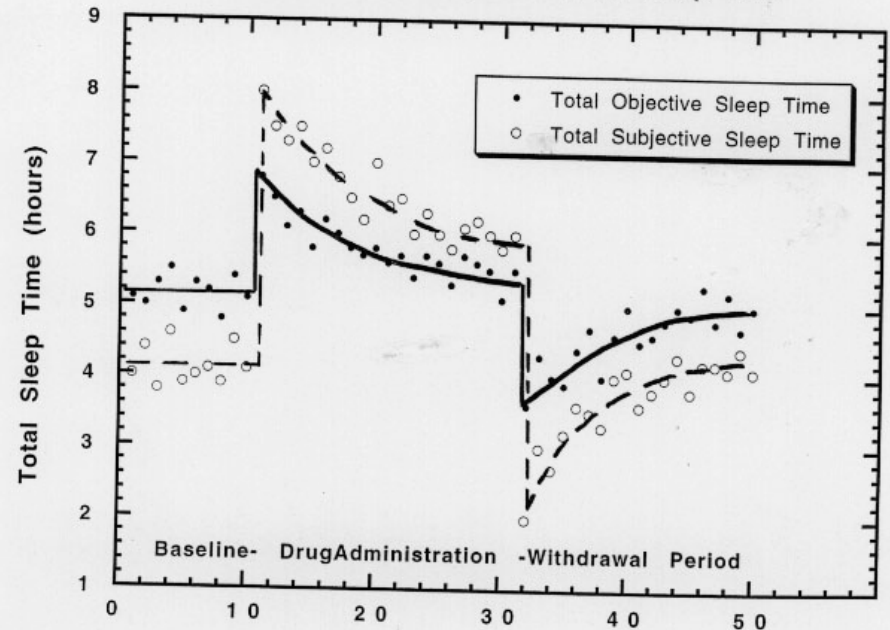
- (eg. temazepam, oxazepam, triazolam, zolpidem, zopiclone)

- Advantage: less daytime impairment

- Disadvantage: **Withdrawal insomnia, drug dependence**



Typical Short Acting Benzodiazepine Effects on Objective and Subjective Total Sleep Time



Other Problems with Medications

- Provide limited symptomatic relief.
- More perceived than real.
- Only work when taken.
- Provide no long term cure.
- Suggestions to use only when needed seems sensible from physiological perspective but can lead to greater psychological dependence.

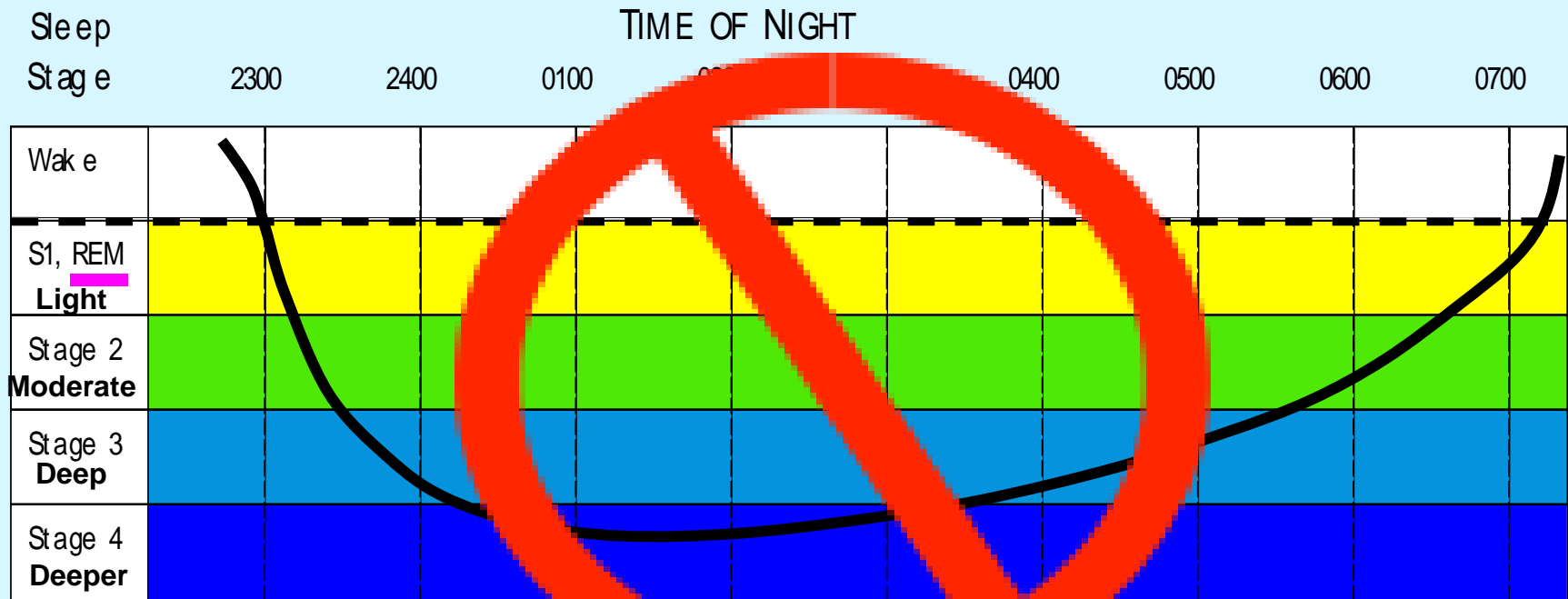
What Alternative to Medication?

- Cognitive/Behaviour Therapy for Insomnia (CBTi)
- Emphasis on behaviour instructions such as Bedtime Restriction Therapy (Sleep Scheduling).
- Sleep Education (cognitive)
 - Sleep Cycles and awakenings normal.
 - Sleep Perception

What is the way in which the stages of sleep occur across the night?

What does the general public believe?

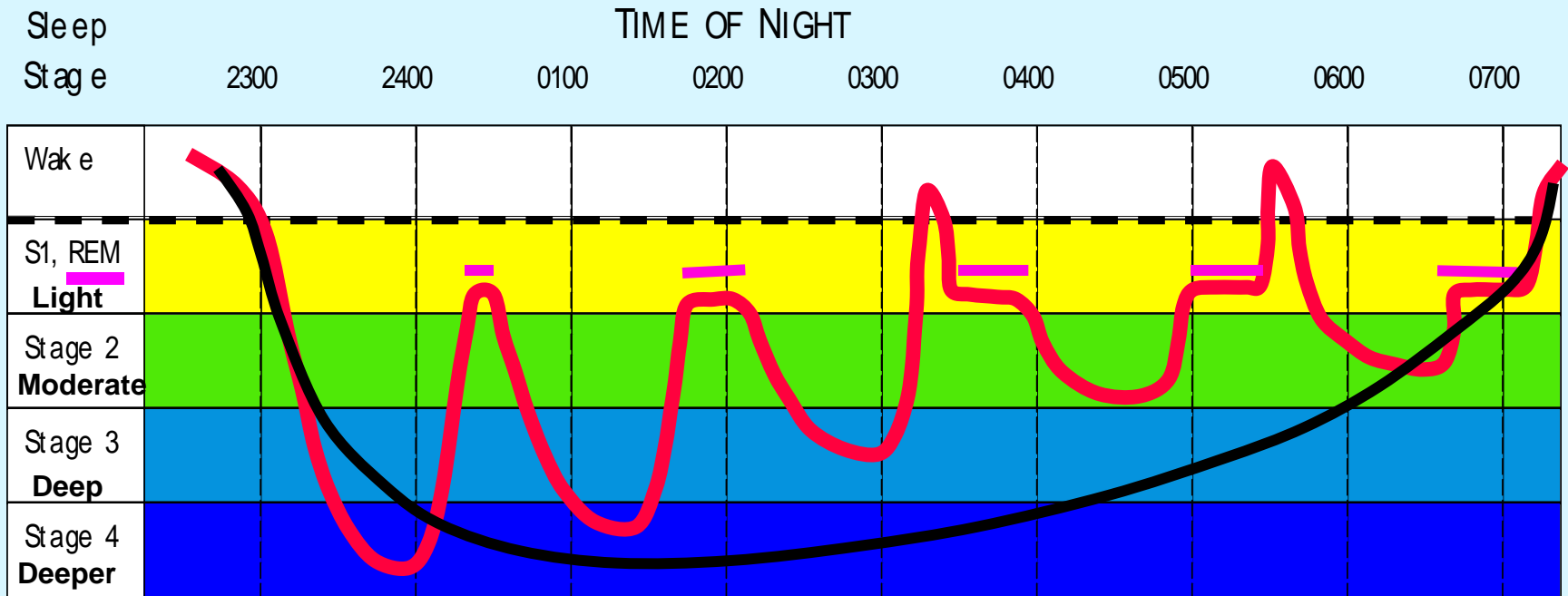
This is what 70% of them drew.



None of them show an awakening from sleep.

This belief about sleep is not true!

The stages of sleep vary dramatically and relatively rapidly across the sleep period.



The sleep period is like a worm or roller coaster varying through 90-minute cycles into deep and light sleep.

Awakenings are a normal part of the sleep period!

Conclusions

- Sleeping difficulties are highly prevalent.
- Daytime distress highest in middle age mainly from insufficient sleep.
- Actual insomnia doesn't increase with age.
- sleep symptoms are increasingly treated with medications in the aged, largely ineffectively and unnecessarily.
- CBTi provides effective and durable treatment of insomnia.