

# Nocturnal Awakenings and Global Sleep Dissatisfaction in the General Population

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# Objectives

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- ✓ To assess the prevalence of nocturnal awakenings (NA) in the general population
- ✓ To evaluate associated daytime consequences
- ✓ To study comorbidity with mental, sleep and organic disorders

# Methodology

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- Representative sample,  $\geq 18$  years, California, New York and Texas population (66 millions inhabitants)
- 8,937 individuals
- Average participation rate: 85.3%

# Collected data

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- ✓ Socio-demographics
- ✓ Symptoms of sleep, psychiatric and organic disorders
- ✓ Quality of life
- ✓ Nocturnal awakenings (moderate & severe, 3 n./week, 1 month)
- ✓ NA comorbidity with psychiatric, sleep and organic disorders

# Collected data

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- ✓ Daytime functioning
  - Fatigue
  - Daytime sleepiness
  - Social functioning
  
- ✓ Medical history
  - Consultations, hospitalizations, medications, diseases, etc.

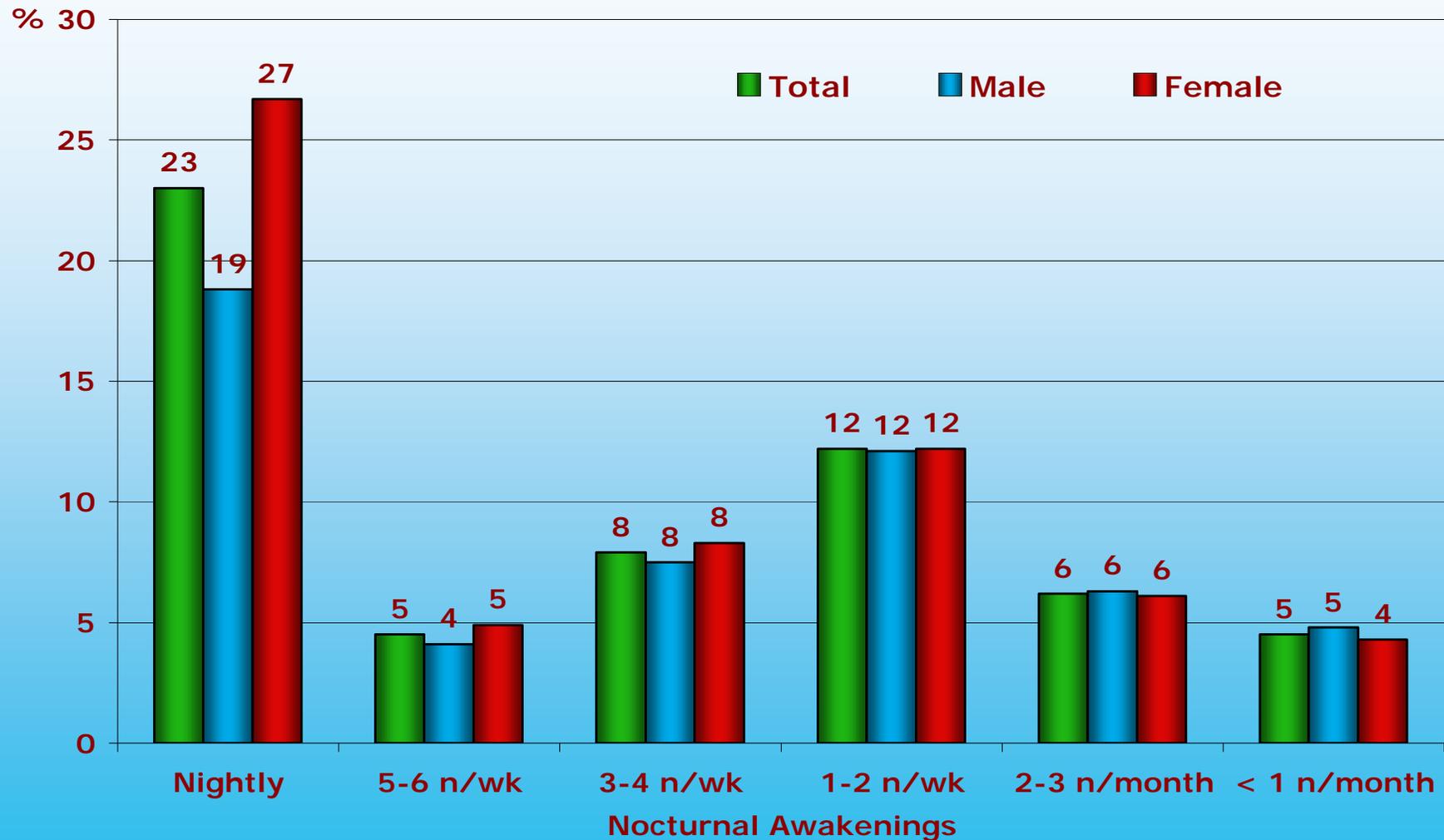
# Diagnoses

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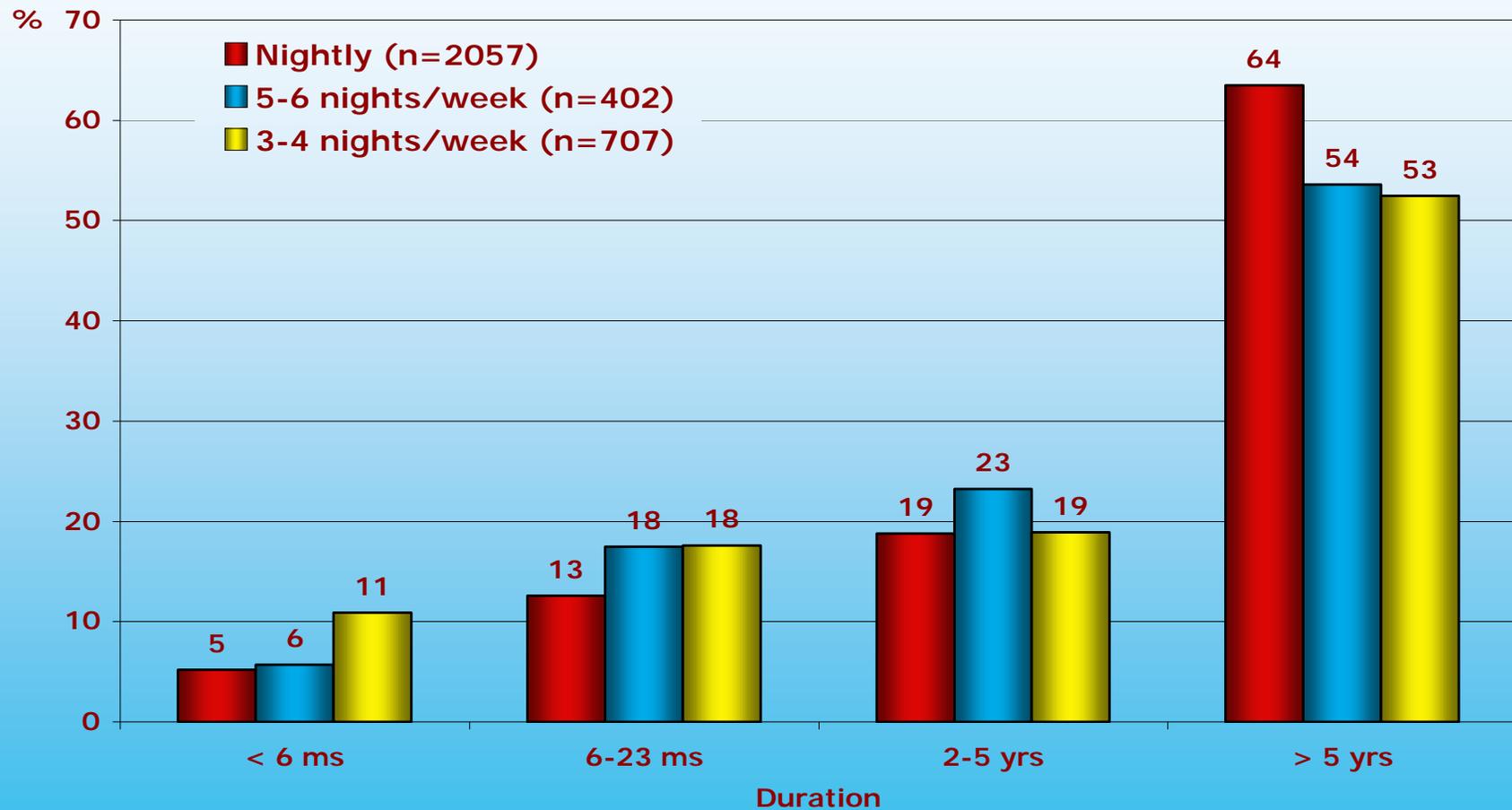
- ✓ Sleep disorder diagnoses according to DSM-IV and ICSD\*
- ✓ Mental disorder diagnoses according to DSM-IV\*
- ✓ Organic diseases according to ICD-10
- ✓ Psychotropic consumption according to the roster of pharmacological compounds

**\* Positive and differential diagnoses**

# How frequent are nocturnal awakenings?



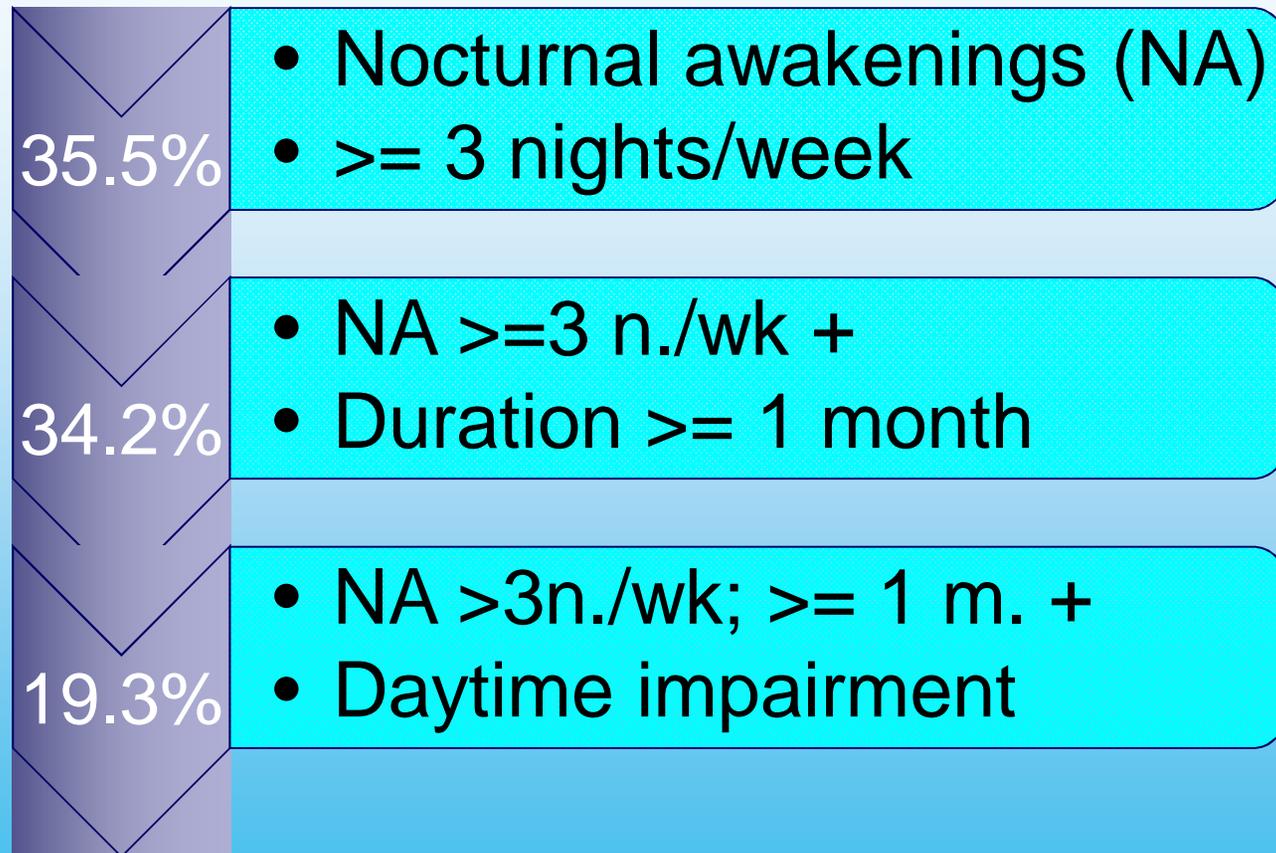
# What is the duration?



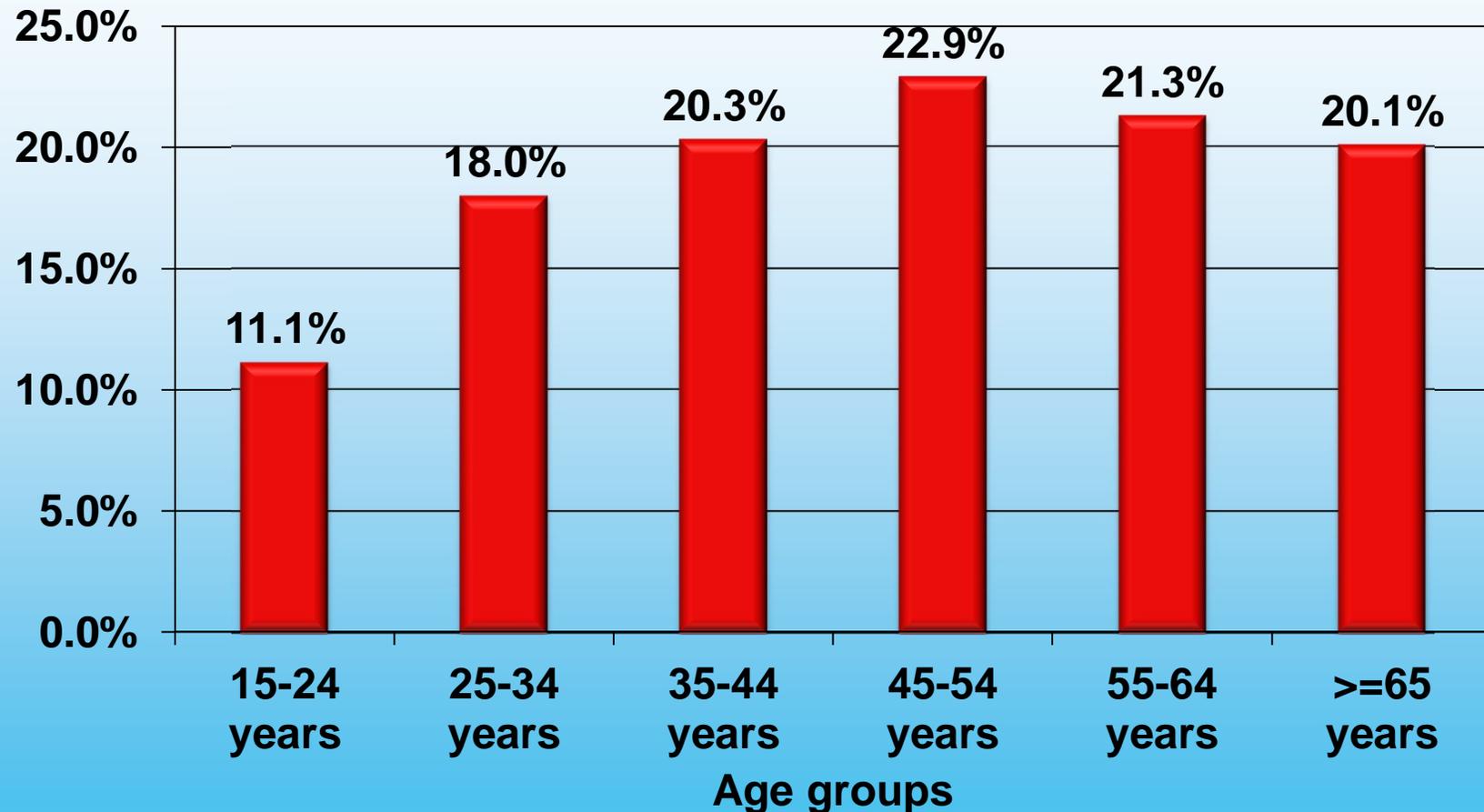
- ✓ Nocturnal awakenings occurring every night were experienced for a longer period than the other frequency groups

# Prevalence of nocturnal awakenings

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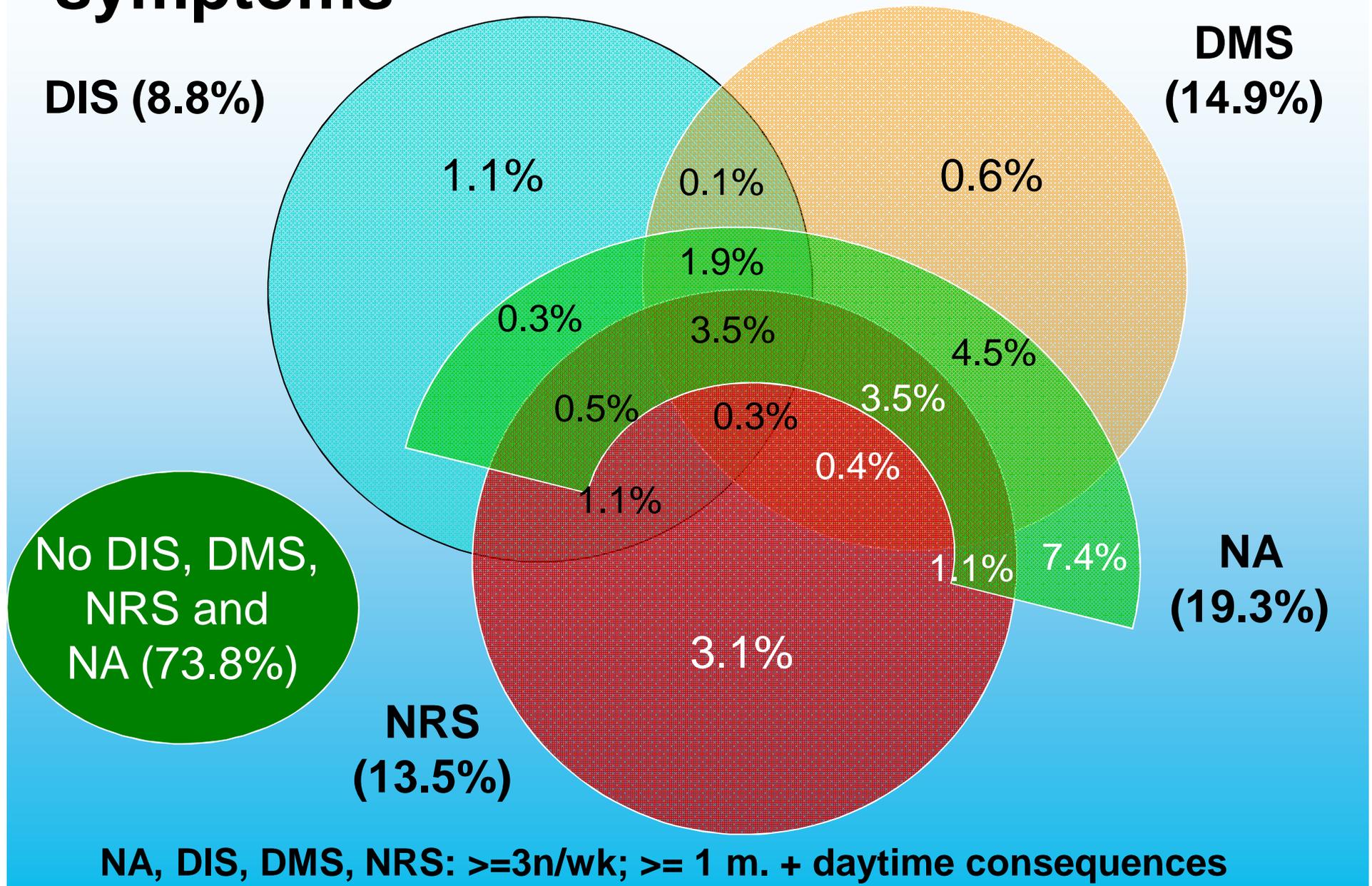


# How do NA change with age?

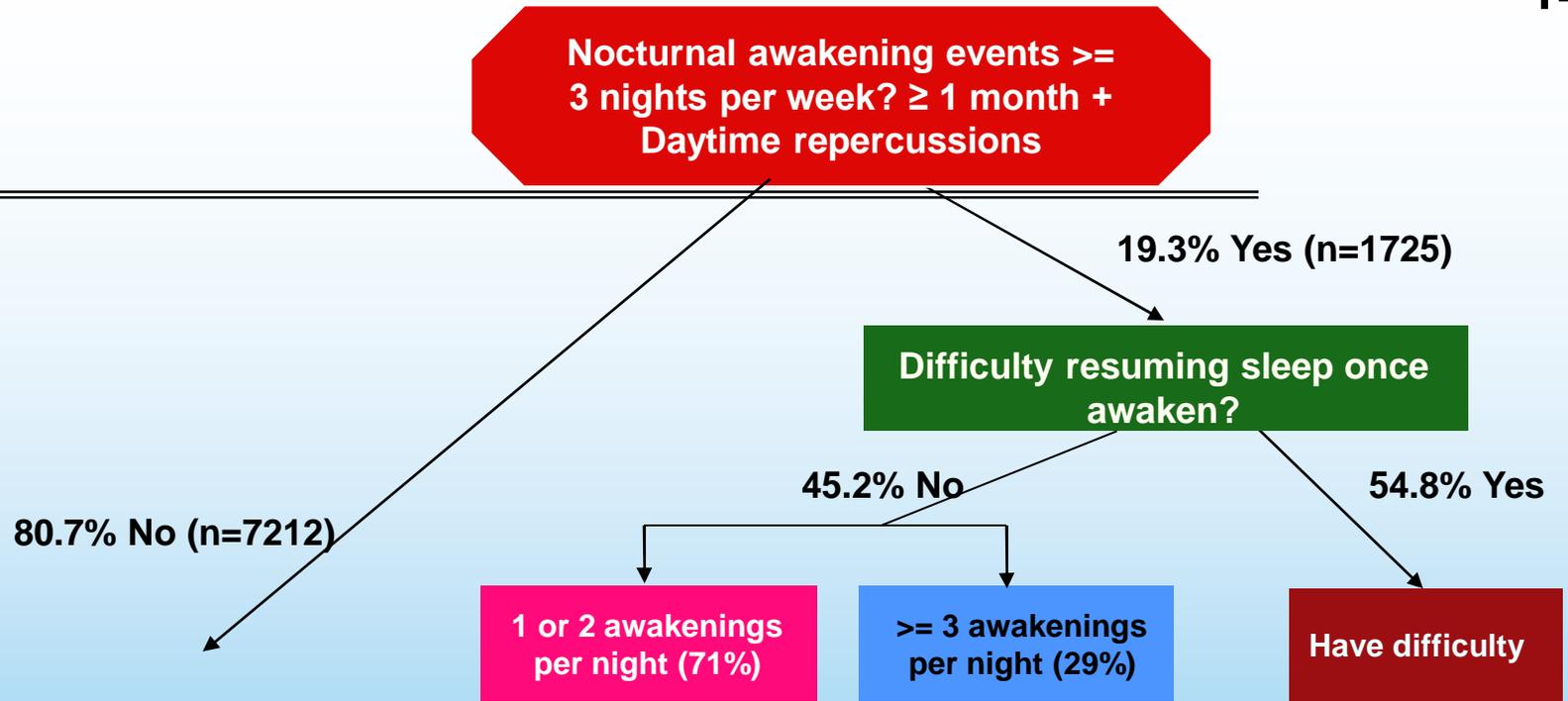


**NA:  $\geq 3$  n/wk;  $\geq 1$  m + daytime consequences**

# Associations between insomnia symptoms

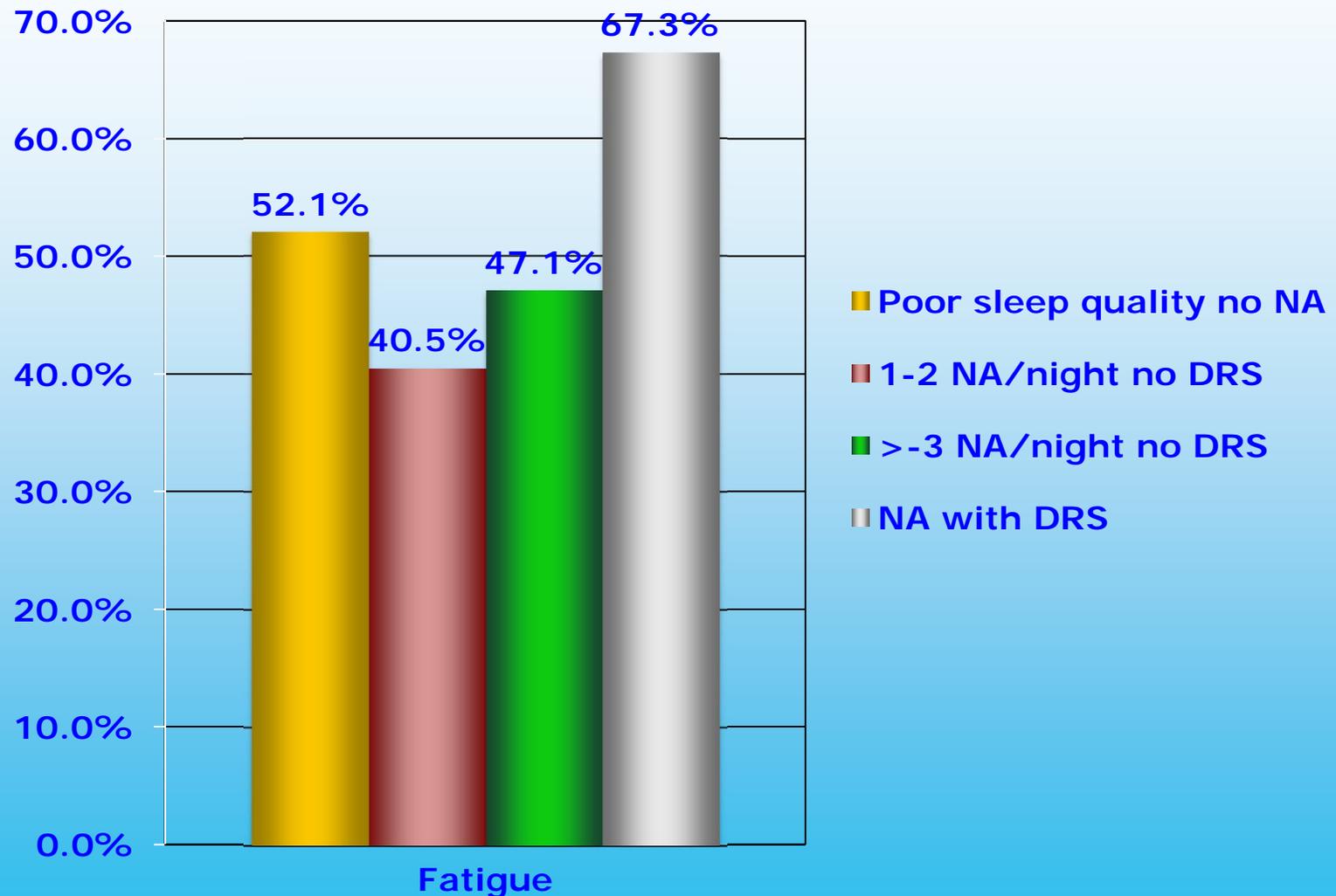


- ✓ 70.1% of **DIS** subjects also have **NA**
- ✓ 63.4% of **NRS** subjects also have **NA**
- ✓ 90.3% of **DMS** subjects also have **NA**



<b>DIS?</b>	<b>19.6% (3.0%)</b>	<b>8.0% (14.0%)</b>	<b>4.8% (21.0%)</b>	<b>43.5% (44.8%)</b>
<b>EMA?</b>	<b>26.7% (3.6%)</b>	<b>6.5% (9.9%)</b>	<b>4.3% (16.6%)</b>	<b>47.9% (43.1%)</b>
<b>NRS?</b>	<b>19.2% (4.5%)</b>	<b>10.6% (28.2%)</b>	<b>6.3% (42.0%)</b>	<b>34.6% (54.1%)</b>
<b>GSD?</b>	<b>23.0% (5.5%)</b>	<b>7.9% (21.5%)</b>	<b>7.0% (45.3%)</b>	<b>40.6% (62.1%)</b>
<b>Unrested upon awakening?</b>	<b>42.4% (16.4%)</b>	<b>9.5% (43.6%)</b>	<b>5.1% (58.3%)</b>	<b>25.2% (67.9%)</b>

# Daytime repercussions: fatigue

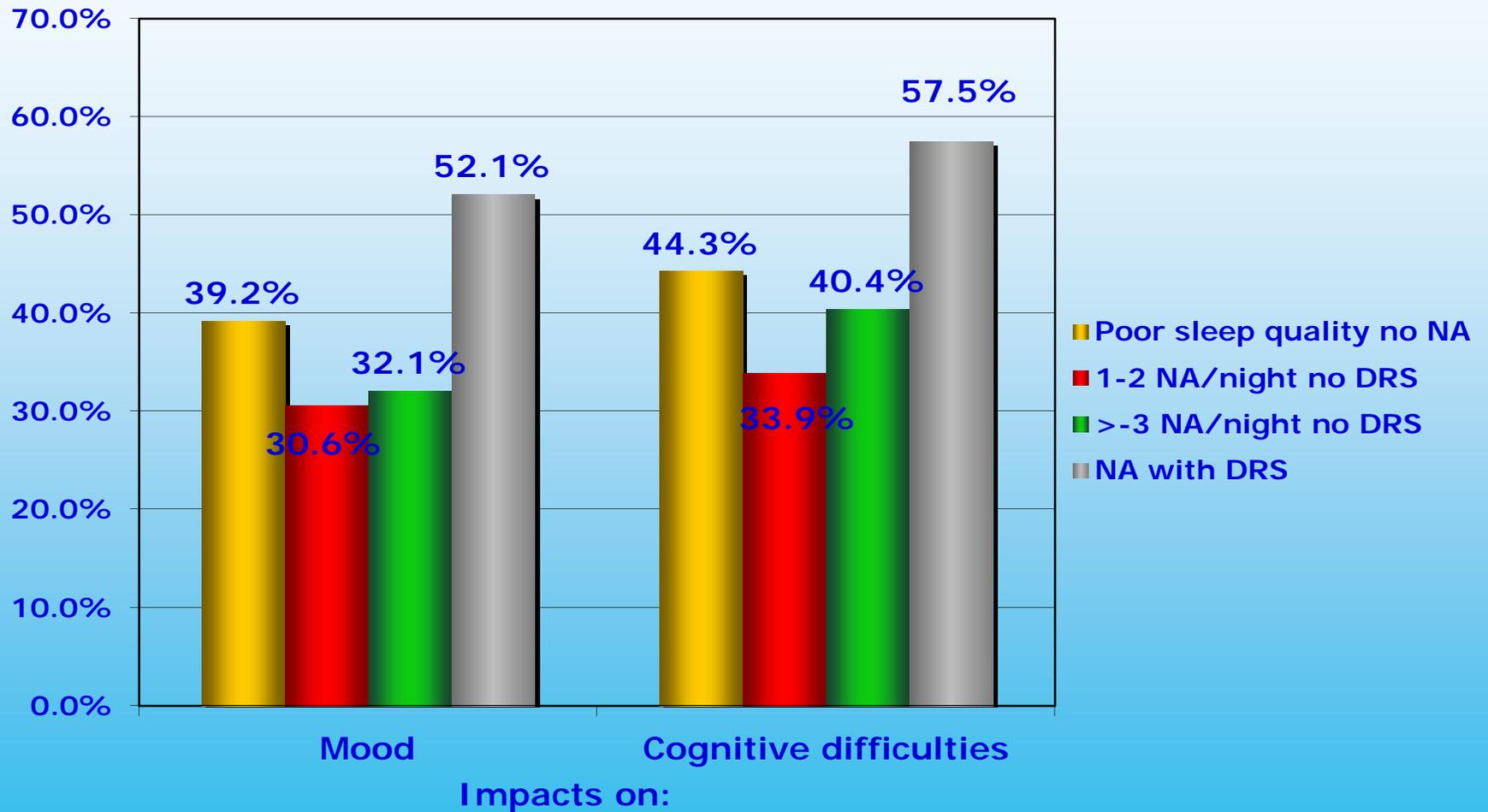


$p < .001$  DRS vs. all other groups

$P < .001$  Poor sleep vs. NA no DRS groups

NA:  $\geq 3$  n/wk;  $\geq 1$  m + daytime consequences

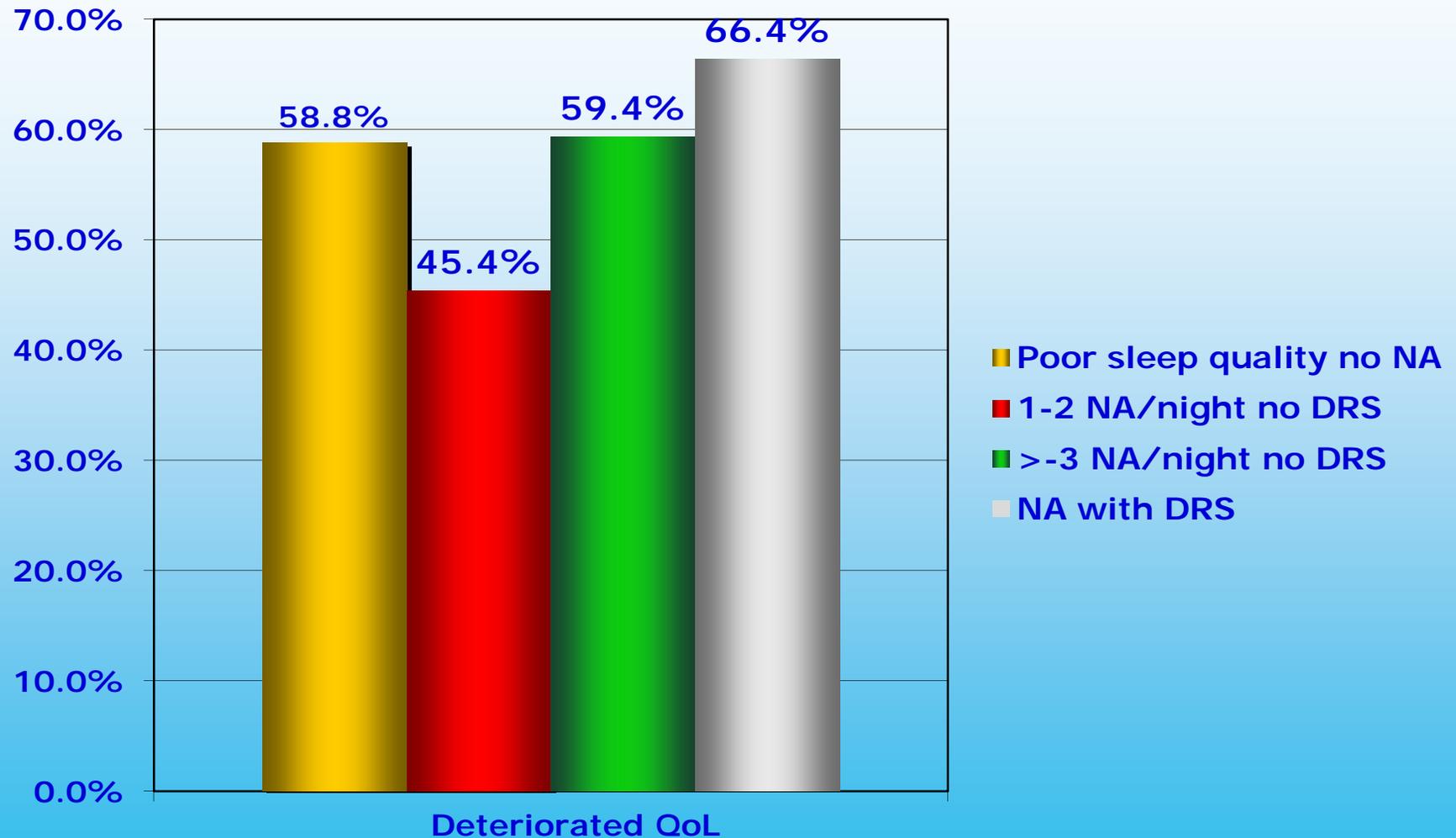
# Repercussions on mood & cognition



**p<.001 DRS vs. all other groups**  
**P<.001 Poor sleep vs. 1-2 NA no DRS**

**NA: >= 3 n/wk; >= 1 m + daytime consequences**

# Repercussions on QoL



$p < .001$  DRS vs. all other groups

$P < .001$  Poor sleep vs. 1-2 NA/n. no DRS

NA:  $\geq 3$  n/wk;  $\geq 1$  m + daytime consequences

# Comorbidity with mental disorders

	Odds ratio (95% CI) <sup>a</sup>		
	1-2 NA <sup>b</sup> /night no DRS	≥3 NA <sup>b</sup> /night no DRS	NA <sup>b</sup> with DRS
Major depressive disorder	2.6 [1.8-3.8]	3.0 [1.8-5.0]	4.9 [3.8-6.3]
Anxiety	1.6 [1.2-2.0]	1.9 [1.4-2.8]	2.2 [1.9-2.7]
Bipolar disorder	2.1 [1.1-4.3]	-	4.6 [3.0-7.0]

<sup>a</sup>Compared with subjects without nocturnal awakenings; CI: confidence interval

ORs adjusted for age and gender

From a representative sample of 8,937 American subjects (using the Sleep-EVAL system)

<sup>b</sup>NA: ≥ 3 n/wk; ≥ 1 m + daytime consequences

# Comorbidity with organic diseases

	Odds ratio (95% CI) <sup>a</sup>		
	1-2 NA <sup>b</sup> /night no DRS	≥3 NA <sup>b</sup> /night no DRS	NA <sup>b</sup> with DRS
Headache/migraine	1.8 [1.3-2.6]	3.3 [2.1-5.2]	3.7 [2.9-4.7]
Diabetes	1.6 [1.0-2.3]	n.s.	1.5 [1.0-2.1]
Upper airway disease	n.s.	1.8 [1.1-3.0]	1.3 [1.0-1.8]
Heart disease	1.8 [1.2-2.6]	n.s.	2.1 [1.5-3.0]
Chronic pain	1.6 [1.3-1.9]	2.8 [2.1-3.7]	2.8 [2.4-3.2]
G.E.R.D.	1.8 [1.1-2.8]	4.9 [3.1-7.8]	2.0 [1.2-3.2]

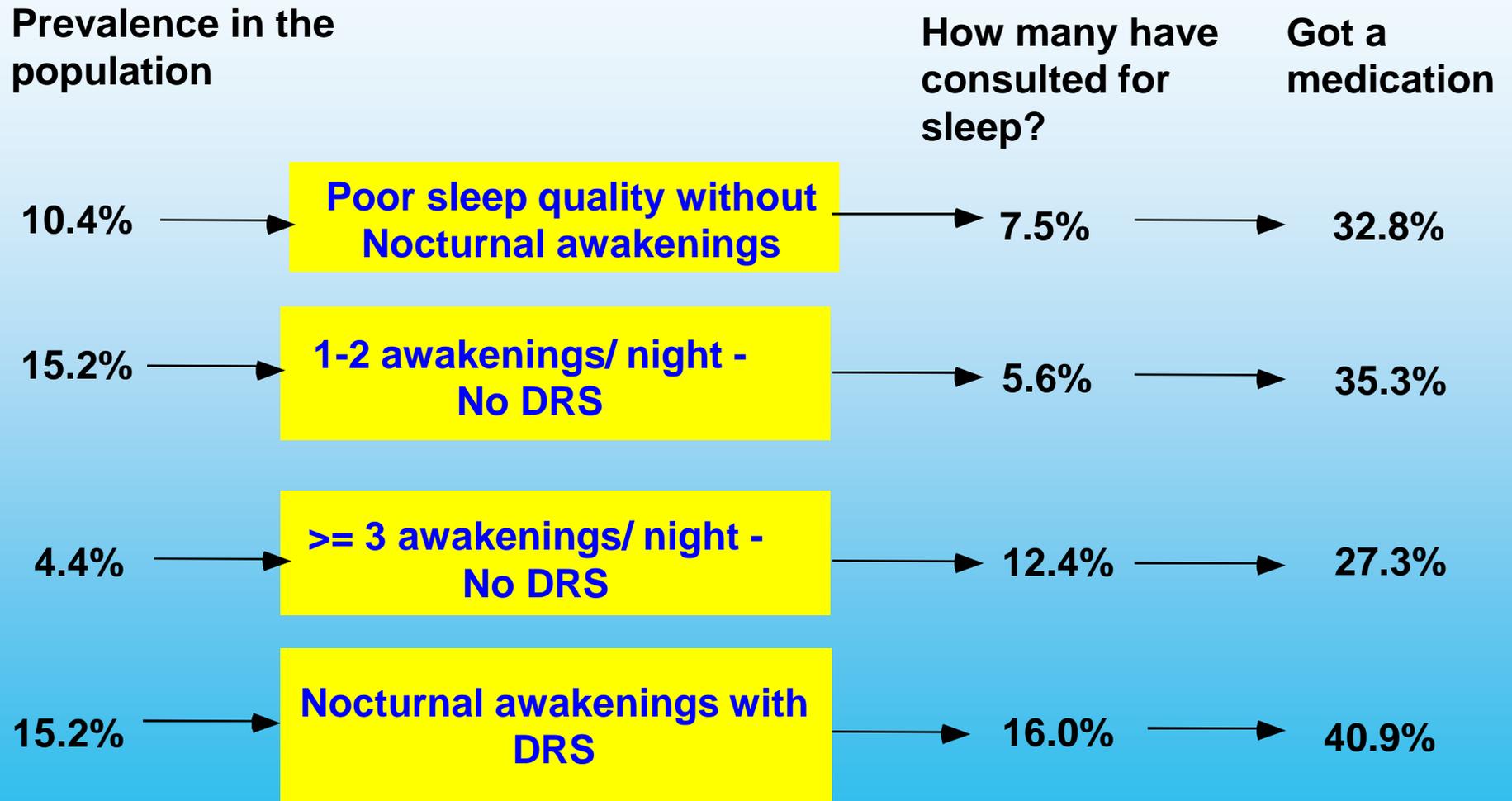
<sup>a</sup>Compared with subjects without nocturnal awakenings; CI: confidence interval

ORs adjusted for age and gender

From a representative sample of 8,937 American subjects (using the Sleep-EVAL system)

<sup>b</sup>NA: ≥ 3 n/wk; ≥ 1 m + daytime consequences

# Consultation & treatment



**DRS: difficulty resuming sleep**

# Conclusions

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- ✓ 35.5% of the general population report nocturnal awakenings  $\geq 3$  nights per week
- ✓ 15.2% of the general population report difficulty resuming sleep once awoken
- ✓ NA with difficulty resuming sleep is strongly associated with greater daytime impairment