

# Is Excessive Daytime Sleepiness Related to Nocturnal Sleep in Parkinson's Disease?

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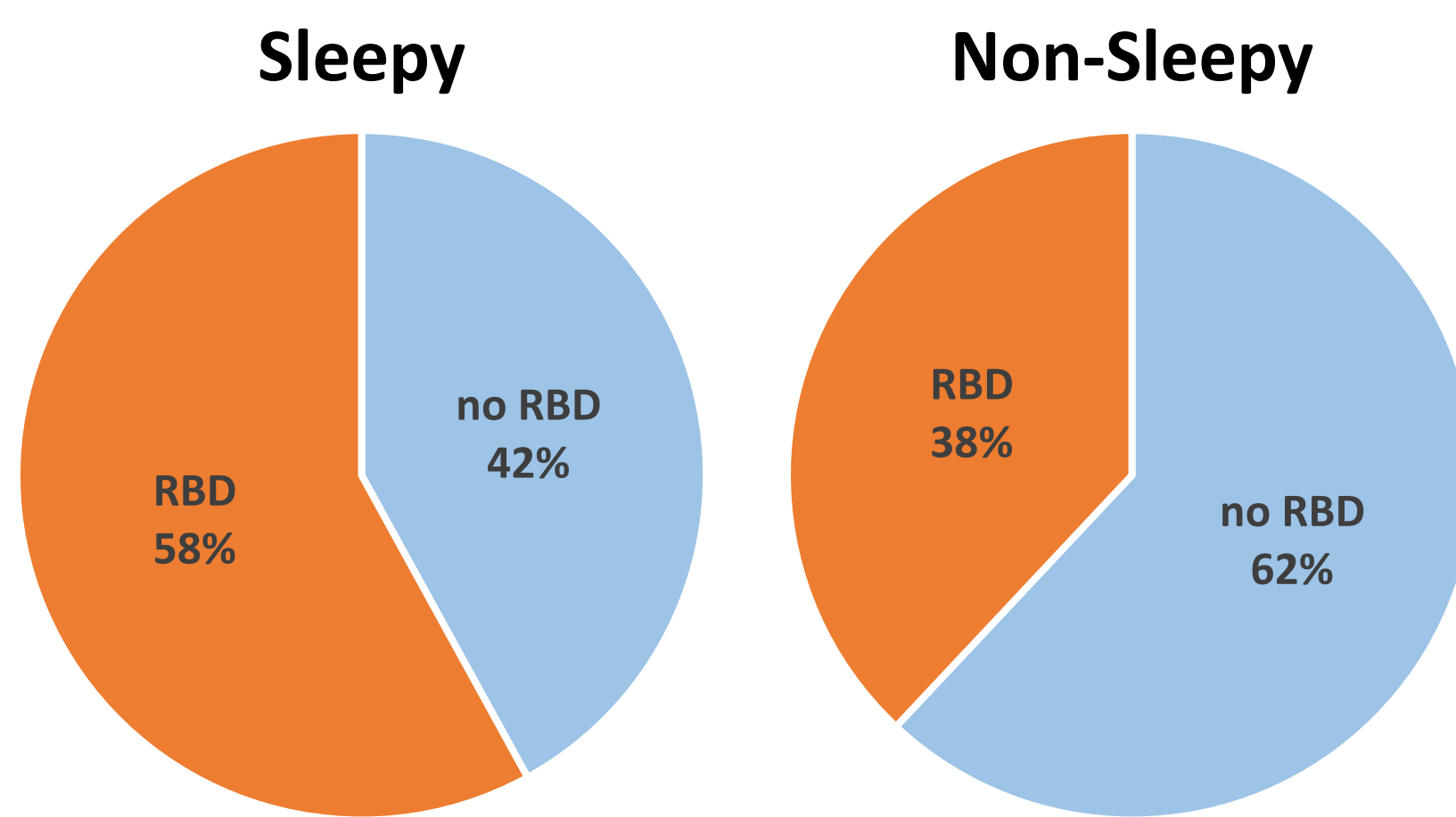
**Objective:** To study the relationship between excessive daytime sleepiness, nocturnal sleep quantity and quality in Veterans with Parkinson's disease.

**Background:** Excessive daytime sleepiness (ES) is common in Parkinson's disease (PD). Modifiable factors are poorly defined. Nocturnal sleep duration and quality are expected to be contributory and are potentially modifiable.

**Design/Methods:** 193 Veterans with PD followed at the Houston Parkinson's Disease Research, Education and Clinical Center (PADRECC) were evaluated for excessive daytime sleepiness using Epworth Sleepiness Scale's (ESS) cut off score of 8. Sleepy (ESS >8) group was compared to Non-Sleepy (ESS ≤8) group with respect to nocturnal sleep duration, subjective sleep quality and presence of REM sleep behavior disorder using Pittsburgh Sleep Quality Index (PSQI) and REM Behavior Disorder Questionnaire-HK (RBDQ-HK), respectively. PD disease severity was assessed using modified Hoehn and Yahr (H&Y) scale.

**Results:** 137/193 (71%) subjects were "Sleepy" versus 56/193 (29%) "Non-Sleepy". Mean nocturnal sleep duration (6.39 vs 6.41 hrs.) and total PSQI scores (7.54 vs 7.13) did not differ between the groups. More subjects in the "Sleepy" group took naps, (Chi-square 2-sided  $p=0.002$ ) and had a higher frequency of naps (median 6.0 vs 3.5, Mann Whitney U  $p=0.003$ ) than the "Non-Sleepy" group. Mean RBDQ-HK scores for "Sleepy" and "Non-Sleepy" groups were 26 and 17, respectively (median 25 vs.12, Mann Whitney U  $p=0.011$ ). The two groups were similar in age, gender distribution, disease severity and nap time length.

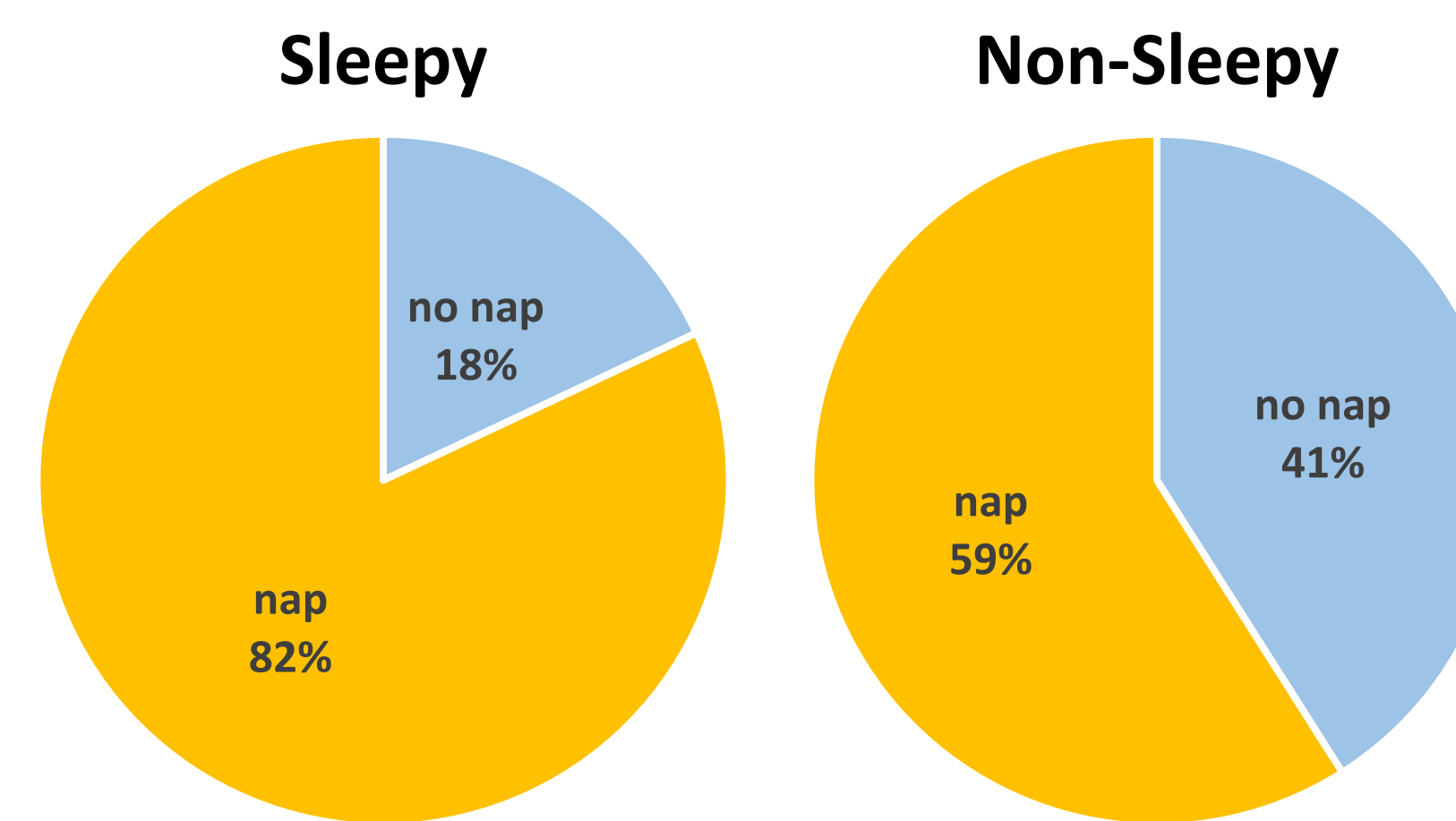
## Presence or Absence of REM Behavior Disorder



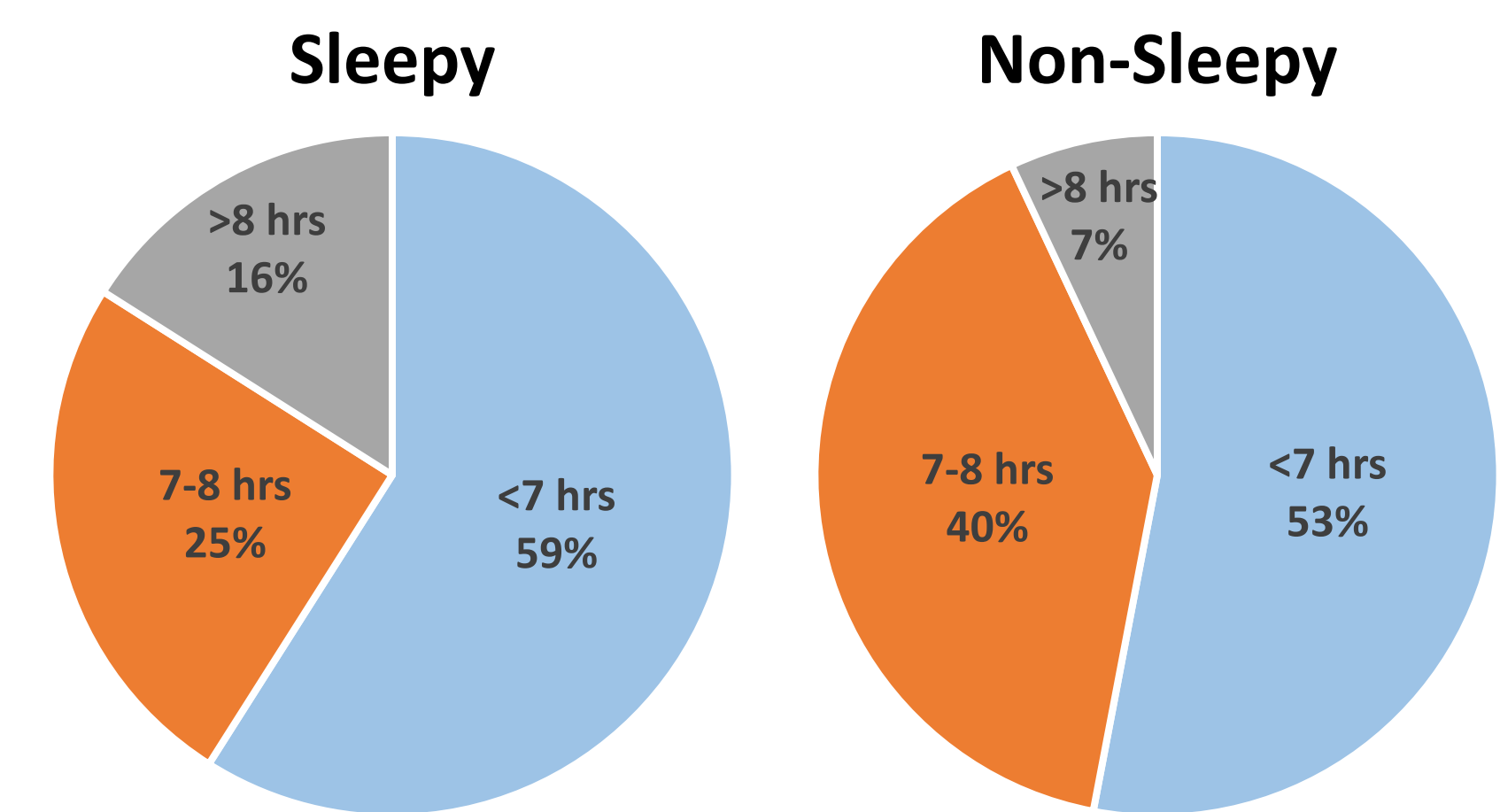
Median RBD scores:  
25 (Sleepy) vs 12 (Non-Sleepy)  
Mann-Whitney U  $p=0.011$

## Pittsburgh Sleep Quality Index (PSQI)

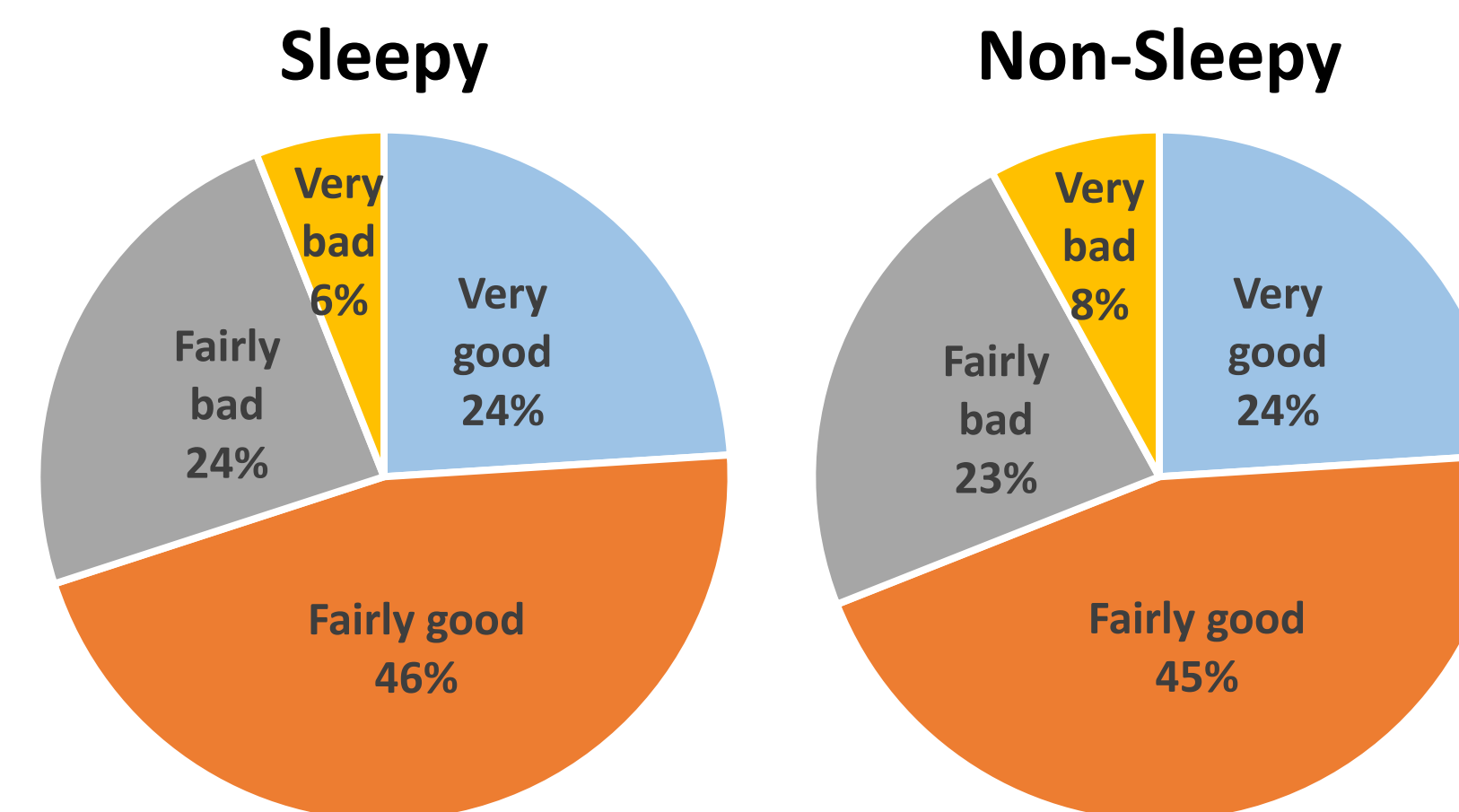
### Presence or Absence of Naps



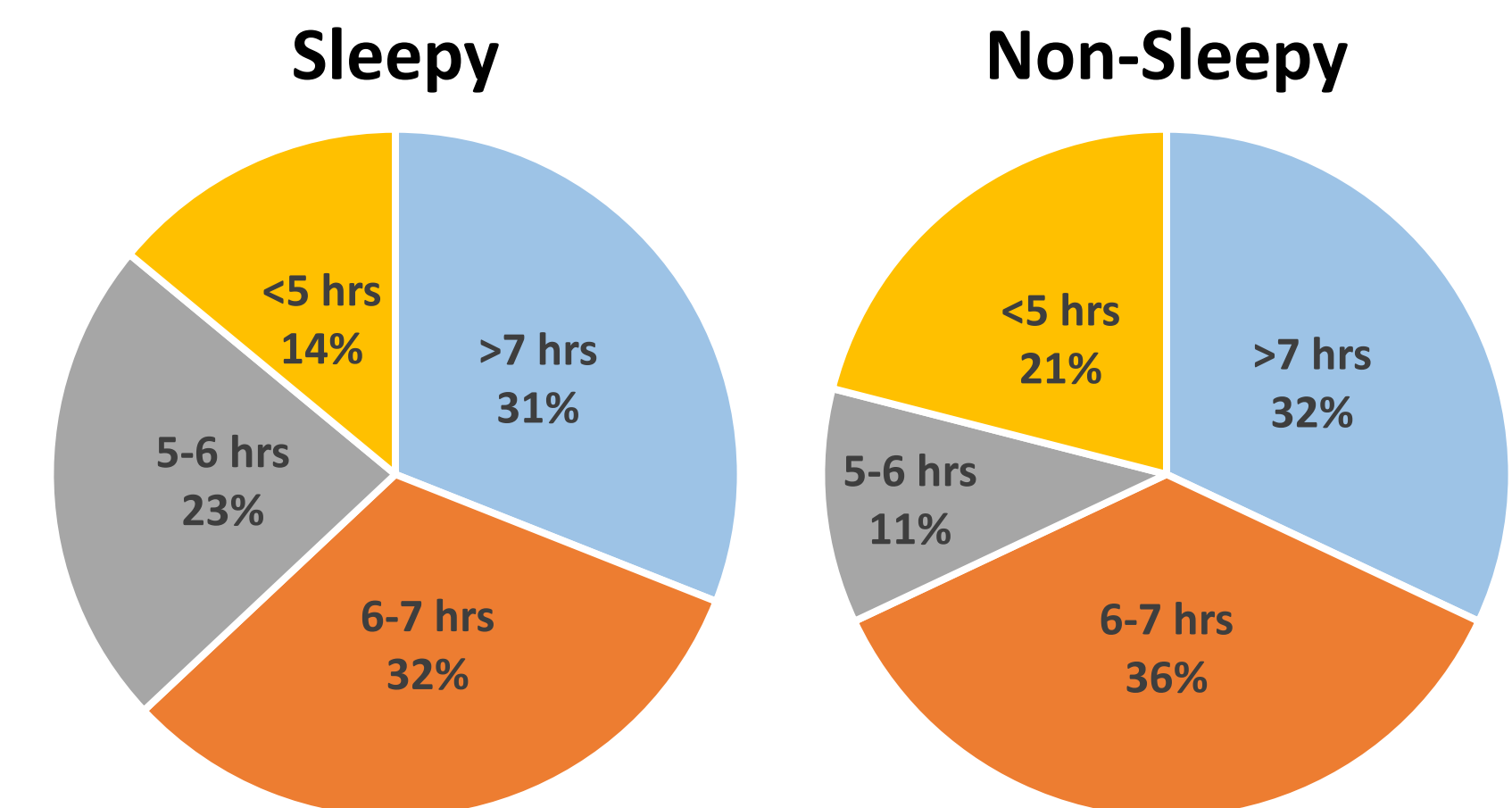
### Nocturnal Sleep Duration



### Sleep Quality



### Sleep Quantity



**Conclusion:** REM sleep behavior disorder is associated with excessive daytime sleepiness in Veterans with Parkinson's Disease. Self-reported nocturnal sleep duration and sleep quality do not appear to share this association.

