

Amnestic MCI, Sleep Disturbance, and Cognitive Functioning

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BACKGROUND

- Research suggests that sleep disturbance can affect cognition, emotional functioning, and behavior in healthy adults.
- Additionally, individuals with neurodegenerative diseases such as Alzheimer's disease (AD) and related dementia often experience sleep disturbance.
- Despite these findings, the effects of sleep on cognition and emotional functioning in persons "at risk" for AD, including those with Amnestic Mild Cognitive Impairment (A-MCI), has received limited study.
- The objectives of this study were:
 1. To examine the prevalence of sleep disturbance in a sample of individuals with A-MCI.
 2. To determine the extent to which sleep disturbance affects cognition, emotional functioning, and behavior in a sample of individuals with A-MCI.

METHODS

Participants:

• Fifty-seven men and 61 women were recruited from the Baylor College of Medicine Alzheimer's Disease and Memory Disorders Center (ADMDC) prospective longitudinal cohort (mean age = 71.83; SD = 8.12; mean education = 15.45; SD = 2.95).

Participants met Petersen Criteria for A-MCI:

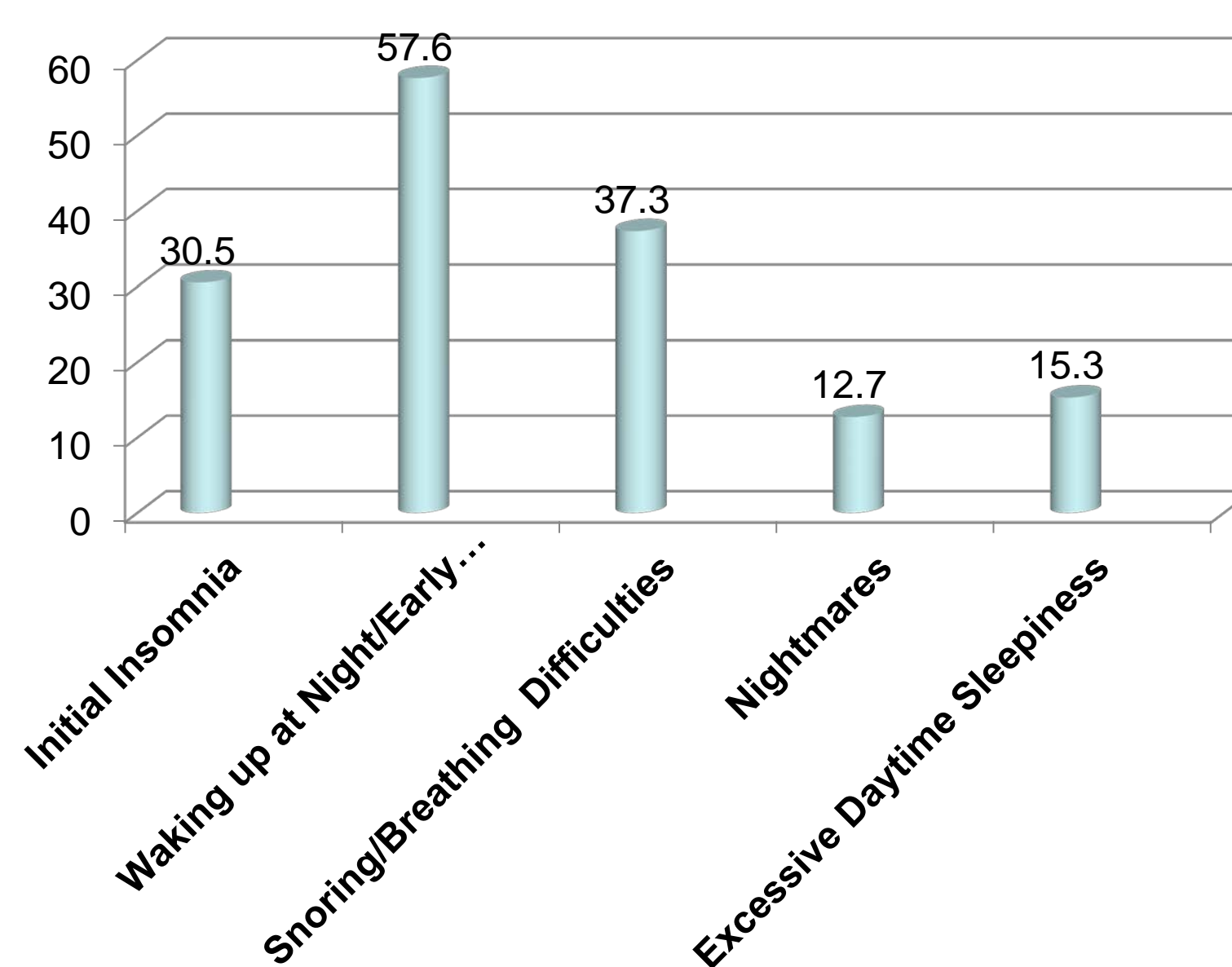
1. Memory complaint corroborated by informant;
2. Objective memory impairment for age/education;
3. Preserved activities of daily living;
4. Did not meet criteria for dementia.

Measures:

- Mini Mental State Examination (MMSE)
- Logical Memory I and II (WMS-R)
- Visual Reproduction I and II (WMS-R)
- Alzheimer's Disease Assessment Scale-Cognitive Subscale (ADAS-COG)
- Geriatric Depression Scale (GDS)
- Neuropsychiatric Inventory Questionnaire (NPI-Q) Severity & Distress
- Sleep Symptom Questionnaire

RESULTS

Types of Sleep Symptoms(%)



Sleep symptoms are common in A-MCI. Approximately 60% of individuals with A-MCI, in this sample, woke up often during the night or earlier than they wanted to. Close to 40% reported snoring or breathing difficulties at night. One third of the sample had trouble going to sleep. Less frequent sleep symptoms were daytime sleepiness (15.3%) and nightmares (12.7%). About one third of the sample had two sleep symptoms (30.5%) followed closely by one sleep symptom (28%).

ADAS-COG & Sleep Symptoms

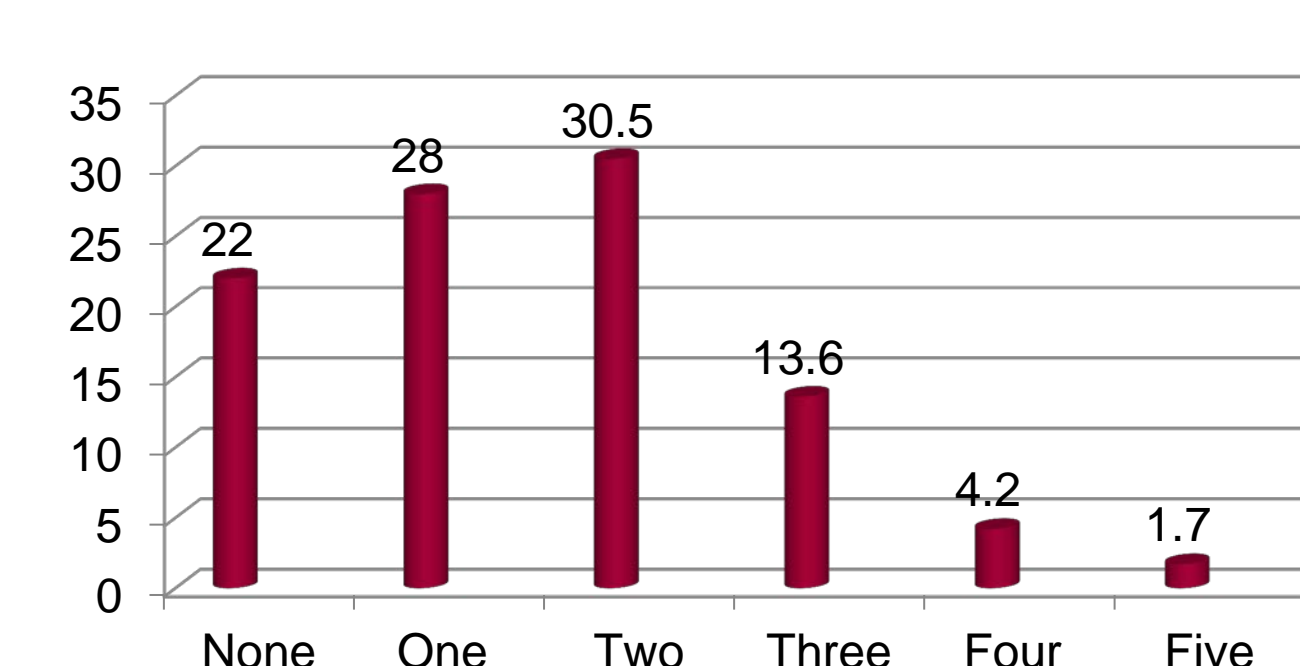
	ADAS Total	Recall Error	Delayed Recall Error	Recog Error
Initial Insomnia	-.011	.103	.012	-.078
Early Morning Waking	-.003	.098	.074	-.099
Snoring/Breathing Difficulties	-.151	-.133	-.232*	-.120
Day time Sleepiness	.123	.153	-.242**	-.120
Nightmares	-.007	.043	.069	.021
Total Sleep Symptoms	.009	.077	-.138	-.117

Reduced performance on memory tests were most strongly correlated with snoring and breathing difficulties at night (delayed recall for verbally and visually presented material). Those who had daytime sleepiness had reduced performance on the number of delayed recall errors they made on the ADAS-COG.

Behavior & Sleep Symptoms

	NPIQ (Severity)	NPIQ (Distress)	GDS
Initial Insomnia	.063	.003	.184
Early Morning Waking	.322**	.305**	.051
Snoring/Breathing Difficulties	.209	.310**	.049
Day time Sleepiness	.225	.214	.174
Nightmares	.064	.175	.076
Total Sleep Symptoms	.349**	.378**	.148

Number of Sleep Symptoms (%)



LM & VR & Sleep Symptoms

	LMII	LMII	VRI	VRII
Initial Insomnia	-.084	-.164	-.061	-.112
Early Morning Waking	-.014	.107	.027	-.040
Snoring/Breathing Difficulties	.189*	.293*	.221*	.166
Day time Sleepiness	.074	.008	.075	.018
Nightmares	-.008	.094	-.100	.032
Total Sleep Symptoms	.048	.111	.080	.033

Sleep symptoms in persons with A-MCI were not associated with mood (as measured by the GDS) in this sample. However, early morning waking was significantly associated with an informant report of behavioral severity and distress in this sample (NPIQ severity/ NPIQ distress). Additionally, total number of sleep symptoms was also significantly related to behavioral severity and distress on this measure.

CONCLUSIONS

- Sleep disturbance is common in amnestic forms of MCI, especially waking up frequently at the night and in the early morning.
- Additionally, snoring/breathing difficulties may be present suggesting the possibility of sleep apnea and other sleep related conditions which are potentially treatable.
- Many individuals with A-MCI have more than one symptom of sleep disturbance.
- Sleep disturbance in A-MCI may impact performance on measures of memory.
- Sleep disturbance in A-MCI may coincide with other behavioral disturbances which lead to distress in carepartners.
- People with A-MCI who have snoring/breathing difficulties may be at risk for more rapid pre-progression rates ($r=.257$, $P<.01$).

IMPLICATIONS

- Early intervention and treatment of sleep symptoms in persons with A-MCI is of import in order to decrease the likelihood of cognitive decline and improve quality of life.
- Neuropsychologists and physicians should consider routine assessment for sleep disturbance for older adults in general and individuals presenting with memory changes in particular.
- Once sleep disturbance has been identified, neuropsychologists and physicians who work with persons with A-MCI, should routinely refer to sleep specialists for further evaluation, especially in the case of snoring/breathing difficulties which may suggest sleep apnea.
- Neuropsychologists should be well-versed in behavioral interventions for sleep disturbance which can then be integrated into their reports and feedback sessions.