

# Lively Limbs Limit, Disrupt Sleep Time for Elders

BY HEIDI SPLETE  
Senior Writer

Frequent nighttime leg movements were significantly associated with sleep disturbance and less total sleep in a study of 102 elderly people with cognitive impairment.

Previous research had shown that sleep time varies from approximately 6 to 10 hours in nursing home residents who have moderate to severe cognitive impairment, and that this sleep is quite fragmented. But the association between periodic limb movements in sleep and total sleep time in older people with cognitive impairment hadn't been established. The nature of the association, which emerged both in people living in nursing homes and in those in the community, remains unclear.

Kathy C. Richards, Ph.D., of the Polish Research Institute, Horsham, Pa., and her colleagues measured sleep variables in 58 men and 44 women of average age 82 years. Of those, 66 people lived in

nursing homes or assisted-living facilities and the rest resided at home.

The participants scored an average of 17.3 on the Mini-Mental State Examination (MMSE), in which a score of 30 signifies the highest cognitive function. The exam rated 7 people as having profound cognitive impairment, 14 with severe cognitive impairment, and 33 within the criteria for moderate cognitive impairment. The test rated 21 people as mildly impaired and 27 with early cognitive impairment. The researchers then used polysomnography to collect data on variables including leg movement, oxygen saturation, time spent in bed, total sleep time, and the apnea-hypopnea index. The team conducted the test during one night in each person's usual sleep setting.

The study participants averaged 5.5 hours of total sleep time, ranging from less than 1 hour to nearly 9 hours. Although the average time spent in bed was 8 hours, only 67% of that time was spent sleeping, and nonrapid eye movement sleep made up 87% of the total sleep time.

The study subjects awoke an average of 34 times during the night, but only an average of 1.8 awakenings was related to leg movements (Sleep 2008;31:224-30).

Participants' scores on the Periodic Leg Movement Index (PLMI) ranged from 0 to 112, with an average of 17. A total of 34 persons (33%) had PLMI scores greater than 15, which is the cutoff point for a diagnosis of periodic limb movement disorder.

Overall, people with a PLMI greater than 15 experienced significantly more minutes awake; less total sleep time and nonrapid eye movement sleep; less sleep efficiency; and a lower apnea-hypopnea index than did study participants with lower PLMI.

After controlling for multiple variables, a combination of time spent in bed, older age, and higher PLMI accounted for 44% of the study population's variance in total sleep time. The analysis found no relationship between PLMI and other sleep variables or participants' age or MMSE scores.

The study revealed no significant difference in total sleep time between people

in private homes and those in nursing homes or assisted-living facilities. "This was surprising considering the pervasive nursing care practices in nursing homes of awakening residents for incontinence and other care and the noise from other residents and staff," the researchers noted.

"An elevated PLMI was associated with a consistent pattern of sleep disturbance, suggesting that [periodic leg movements] or other related comorbidities, such as restless leg syndrome, may be a cause for poor sleep in elders with cognitive impairment," they wrote. In a statement, Dr. Richards called that finding "important because treatment of periodic leg movements may result in improved nighttime sleep and improved quality of life in this vulnerable population."

The authors said the study was limited by a lack of data on the potential role of upper airway resistance as a cause of nighttime leg movement.

Dr. Richards has received research support from Beverly Healthcare Corp., but the study had no industry sponsorship. ■

## Polypharmacy, Nonanticholinergic Activity Can Spur Functional Decline

BY SHERRY BOSCHERT  
San Francisco Bureau

SAN FRANCISCO — Medications that are not classically thought of as anticholinergic but that have anticholinergic properties contribute to functional declines in older patients who are on multiple drug therapy.

Investigators tabulated cumulative anticholinergic burden scores for 3,070 adults aged 70 years or older, with each drug scored 0-3 based on serum anticholinergic activity. Every 1-point increase in the anticholinergic burden score was equivalent to adding a year of age as far as patients' ability to complete activities of daily living (ADL) and instrumental activities of daily living (IADL), Dr. Kaycee M. Sink of Wake Forest University, Winston-Salem, N.C., and her associates reported in a poster.

"While one drug in and of itself may not be enough to cause someone disability or functional impairment, if you're on multiple drugs with anticholinergic activities, that might add up," Dr. Sink said at the annual meeting of the Gerontological Society of America. The cross-sectional analysis used two previously existing lists of dozens of drugs with anticholinergic burden scores, including medications like digoxin and diltiazem that usually aren't thought of as anticholinergic.

The analysis was part of the Ginkgo Evaluation of Memory Study, a randomized, controlled trial of ginkgo to prevent dementia. Previous studies have shown an association between anticholinergic drug use and decreased muscle strength or poorer cognition in older adults, possibly related to the drugs' central effects on psychomotor slowing or their effects at the neuromuscular junction.

In the current study, 39% of participants were taking one or more drugs with anticholinergic activity. In this anticholinergic subgroup, 89% reported their health as good or better with the medications, compared with 96% of participants on no drugs with anticholinergic activity. Hypertension was present in 60% of those in the anticholinergic group and 51% of those in the nonanticholinergic group.

Performance-based assessments of ADL and IADL found that the likelihood of being dependent on help for ADL or IADL increased 10%-15% for every 1-point increase in the cumulative anticholinergic burden score, Dr. Sink said.

The results were adjusted for potentially confounding factors including age, sex, alcohol use, body mass index, hypertension, self-reported health, and clinic site. Effects on gait speed were adjusted for the person's height. Every 1-point increase in the anticholinergic burden score decreased gait speed by 0.009 m/sec.

The study was limited by an inability to completely control for the potentially confounding effects of the indications for the drug use. In addition, the anticholinergic burden scoring system did not consider dose effects.

The investigators will conduct a longitudinal study of whether anticholinergic burden predicts functional decline over time. Results should be available in a year or so, she said. If the anticholinergic burden score can predict who will decline faster, "then I think it would be useful to create a tool that clinicians can use in the office to calculate up each person's anticholinergic score," Dr. Sink added. "I don't think it would be that hard" to create a computerized tool to assess anticholinergic burden.

Dr. Sink has no association with companies that make the drugs studied. ■



**'If you're on multiple drugs with anticholinergic activities, that might add up.'**

DR. SINK

## Sleep Problems May Predict Cognitive Issues in Elderly

BY SHERRY BOSCHERT  
San Francisco Bureau

SAN FRANCISCO — Reports of difficulty falling asleep were associated with poorer performance on some cognitive measures in a study of 174 elderly community-dwelling blacks.

Self-reported sleep trouble appears to be a unique predictor of cognitive performance, even after controlling for age, gender, education, depression, and current health, reported Alyssa A. Gamaldo of the psychology department at North Carolina State University, Raleigh, and her associates.

When asked whether they'd had any trouble falling asleep in the past year, 29% of participants said they did, a rate that's consistent with the findings of previous, more rigorous studies of sleep difficulties, she said at the annual meeting of the Gerontological Society of America. From 10% to 40% of older adults reported sleep difficulties in earlier studies.

Investigators in the current study analyzed data from a subset of blacks in the Baltimore Longitudinal Study of Aging. Participants were living independently and had a mean age of 73 years, a mean education of 10 years, and a mean monthly income of \$800. The cohort was 71% women.

Those who reported sleep trouble tended to perform worse on measures of short-term mem-

ory and working memory. Short-term memory was measured by the forward digit span task and the backward digit span task, and working memory was measured by the alpha span task.

Participants also completed the Mini-Mental State Examination to measure global cognitive status and the California Verbal Learning Test to measure episodic memory, but results for these were not significantly different between adults who did or did not have trouble sleeping.

Several previous studies have suggested that the relationship between self-reported sleep difficulties and cognitive performance may be moderated by depression. In the current study, however, neither depression nor older age appeared to exacerbate differences in cognitive performance, Ms. Gamaldo said.

The study employed the Center for Epidemiological Studies Depression Scale to measure depressive symptoms and these scores were used to categorize 36 participants as depressed (a score of 16 or greater) and 138 as not depressed (score of 0-15).

The analysis did find one significant interaction related to age and depression. Participants who were both older and depressed were more likely to have low scores on the Mini-Mental State Examination.

To assess current health, participants were asked to rate their health on a scale from 1 ("very poor") to 4 ("very good"). ■