We Have Much More to Learn About the Relationships Between Napping and Health in Older Adults

Significant changes in sleep and circadian sleep-wake rhythms mark advancing age.[1] Among these changes is the increasing prevalence of daytime and evening napping reported by older adults.[2] The causes of such napping behavior and why it increases in prevalence with advancing age are unknown. No consistent relationships between complaints of nighttime sleep disruption and daytime napping have been observed.[2,3] The antecedents and consequences of napping are poorly understood, and it is unclear whether napping is a beneficial, detrimental, or neutral behavior.

Elucidating the role(s) of napping in the health of older adults is not a simple task. Napping may be beneficial or problematic depending on individual circumstances; an individual's sleep quality, health status, and living conditions. For example, daytime naps in healthy older adults who do not complain of significant sleep disturbance may be beneficial, resulting in improved daytime functioning,[4] but napping in older adults often occurs in association with greater health burden[2,3] and may be associated with greater mortality.[5,6] Distinctions need be made between napping behaviors of healthy, optimally aging older adults and of older adults with significant health burden who may or may not have poor sleep. Distinctions need also be made between the wide variety of social and environmental conditions in which older adults live—alone; with a spouse who may have significant sleep or health complaints themselves; and particularly in institutions, where sleep is typically significantly disrupted. It is likely that napping is associated with different antecedents and consequences in each of these unique subpopulations.

Napping behavior is complex, and attempts to determine its antecedents and consequences need to take this complexity into consideration. Adequately describing napping is no simple matter. Comprehensive assessment of napping should include reported frequency, duration, and timing and should be made over a period of weeks. It may also be important to distinguish regular, planned naps from those that are unplanned, because it is likely that these represent different types of napping. Furthermore, because there is some evidence that older adults underreport their napping behavior,[7] objective (e.g., actigraphic) assessment to detect unreported naps should optimally supplement self-report-based assessments of napping behavior. This issue of the *Journal of the American Geriatrics Society* contains two studies that examine aspects of the role napping in aging.[8,9]

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Pisarsic et al.[8] examined baseline self-reported napping and measures of sleep quality and quantity in 414 community-dwelling older adults participating in a pilot study of the efficacy of physical activity in preventing disability. Employing a convenience sample, this study assessed napping behavior using only self-report, and that of a relatively limited nature, because subjects were asked only "During the past month, how many hours did you nap or sleep during a typical day?" Subjects reporting any (>0 minutes) sleep in response to this question were classified as nappers. They report that 54% their sample reported napping. They found no differences in any self-reported sleep parameters between nappers and nonnappers but found that nappers were more likely to be men and have diabetes mellitus and that these factors and lower mental status scores were all associated with longer nap durations. They concluded that, given its high prevalence and association with diabetes mellitus, napping should be assessed as part of sleep behavior in clinical practice and future research.

It is instructive to compare the study of Pisarsic et al. with another recent study that examined self-reported napping in older adults. Foley et al.,[2] who examined self-reported napping and measures of sleep quality and health in a representative sample of 1,506 older adults, reported that 15% of respondents reported regular napping (defined as reports of napping 4 to 7 times a week). Regular napping ranged in prevalence from 10% of those aged 55 to 64 to 25% in those aged 75 to 84. Pisarsic et al.[8] used a lenient definition of napping, defining anyone who reported any napping at all during the preceding month as a napper. This liberal definition would suggest that Pisarsic et al.'s sample of "nappers" was heterogeneous, and it is likely that it accounts for the greater frequency of nappers in their sample than in Foley et al.'s.

Nevertheless, both studies failed to find relationships between nighttime sleep complaints and napping. Although Pisarsic et al. reported an association between napping and diabetes mellitus, Foley et al. reported that, in addition to older age and a strong association with excessive daytime sleepiness, other factors that independently increased prevalence of regular napping included a diagnosis of depression, bodily pain, and nocturia.

It is likely that the differences in reported associations between napping and health burden were the result of differences in the size and composition (i.e., convenience

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vs representative sample; heterogeneous vs more-strictly defined groups) of each study's samples. Their complete reliance on self-report limited both studies. Pisarsic et al. used a crude definition of napping, whereas Foley et al. were able to parse napping behavior more finely and examine the prevalence of regular napping and its associations with health burden. However, both studies, despite their considerable methodological differences, reveal that napping in older adults is common and not associated with nighttime sleep complaints but rather with health burden.

Dautovich et al.,[9] in the second of the two napping studies reported in this issue, examined subjective and objective measures of napping and the relationship between evening napping and nocturnal sleep quality in 100 community-dwelling older adults recruited for a study of normal sleep patterns. In marked contrast to Pisarsic et al.'s complete reliance on a single instance of self-report, Dautovich et al. collected subjective and objective sleep and napping data over a 12-day period using sleep diaries and actigraphy. The authors found evidence of more-objective napping than would be expected according to subject self-reports, suggesting that older adults underreport napping. Almost all subjects in this study napped, with 27% categorized as daytime-only nappers and 58% as day and evening nappers. Day and evening napping was not associated with impaired sleep. The authors conclude that elimination or restriction of napping, as often recommended in cognitive-behavioral therapy for insomnia, may not meet the needs of all individuals with insomnia.

The finding of Dautovich et al. that subjective nap frequency in their sample was four naps in 12 days, whereas objective nap assessment revealed a frequency of six naps in 12 days, is consistent with the previous report of Yoon et al.,[7] who noted that only 23% of those that had such events self-reported actigraphically recorded evening naps and point out the importance of including objective assessment of napping behavior in future studies. Fortunately, such studies are underway, because actigraphic assessment of sleep has been added to several large ongoing longitudinal cohort studies (e.g., Study of Osteoporotic Fractures and Osteoporotic Fractures in Men) and should provide important data on this issue over the coming years.

Dautovich et al. reported that all but three of their subjects (who were subsequently excluded from reported analyses) napped, but they, like Pisarsic et al., defined nappers as anyone who napped during their 12-day assessment period and did not examine the frequency of regular napping, as Foley et al. did. Furthermore, Dautovich et al. reported on a convenience sample originally recruited to study sleep patterns in older adults. These factors all help account for the presence of the significant napping behavior that Dautovich et al. reported.

There is reason to question the final conclusion offered by Dautovich et al. who, because of their observation that day and evening napping was not associated with impaired sleep, argue that elimination or restriction of napping, as often recommended in cognitive-behavioral therapy for insomnia, may not meet the needs of all individuals with insomnia. This may be an overreaching conclusion for several reasons. First, the authors propose that their finding "conflicts with conventional sleep hygiene recommendations to avoid napping altogether or to restrict naps to before noon." Yet many experts in this area take a more nuanced approach to this concern. For example, some sleep hygiene guidelines suggest that patients "explore the help/harm of naps."[10] Second, and perhaps more tellingly, the absence of nonnapping subjects in their study makes it difficult to credibly determine that day and evening napping was not associated with impaired sleep, because their key comparison was made with another group of nappers. The effect of napping on nocturnal sleep in older adults is a controversial issue.[3] Whether napping has a detrimental effect on the sleep of older adults and whether that effect is different for those who are healthy and non-sleep-complaining and those who are health-burdened and sleep-complaining remains to be clearly demonstrated.

We have much, much more to learn about napping in older adults and its relationship to their health and well-being. The authors of both articles that appear in this issue of the *Journal* are to be commended for their efforts in elucidating this complex health issue. Nevertheless, we need to move away from fairly simplistic assessments of napping such as that employed by Pisarsic et al. to more-nuanced assessments such as those used by Dautovich et al., whose use of more-elaborate self-report over a period of days, paralleled by objective assessment techniques, allows for a better appreciation of the complexity of napping behavior. However, such techniques would be best employed in larger, more-representative samples including nappers and nonnappers. When such techniques are employed longitudinally in such samples, we will begin to truly appreciate the antecedents and consequences of napping across the spectrum of sleep, health patterns, and living conditions seen in the older adult population.

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REFERENCES

1. Ohayon MM, Carskadon MA, Guilleminault C et al. Meta-analysis of quantitative sleep parameters from childhood to old age in healthy individuals: Developing normative sleep values across the human lifespan. Sleep 2004; 27:1255–1273.
2. Foley DJ, Vitiello MV, Bliwise DL et al. Frequent napping is associated with excessive daytime sleepiness, depression, pain and nocturia in older adults. Am J Geriatr Psychiatry 2007;15:344–350.
3. Ancoli-Israel S, Martin JL. Insomnia and daytime napping in older adults. J Clin Sleep Med 2006;2:333–342.

4. Campbell SS, Murphy PJ, Strauble TN. Effects of a nap on nighttime sleep and waking function in older subjects. J Am Geriatr Soc 2005;53:48–53.
5. Bursztyn M, Ginsberg G, Stessman J. The siesta and mortality in the elderly: Effect of rest without sleep and daytime sleep duration. Sleep 2002;25:187–191.
6. Burazeri G, Gofin J, Kark JD. Siesta and mortality in a Mediterranean population: A community study in Jerusalem. Sleep 2003;26:578–584.
7. Yoon IY, Kripke DF, Elliott JA et al. Age-related changes of circadian rhythms and sleep-wake cycles. J Am Geriatr Soc 2003;51:1085–1091.
8. Picarsic JL, Glynn NW, Taylor CA et al. Self-reported napping, sleep duration and quality in the Lifestyle Interventions and Independence for Elders Pilot (LIFE-P) Study. J Am Geriatr Soc 2008, doi: 10.1111/j.1532-5415.2008.01838.x.
9. Dautovich ND, McCrae CS, Rowe M. Subjective and objective napping and sleep in older adults: Are evening naps bad for nighttime sleep? J Am Geriatr Soc 2008, doi: 10.1111/j.1532-5415.2008.01822.x.
10. Vitiello MV. Effective treatment of sleep disturbances in older adults. Clin Cornerstone 2000;2:16–27.