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Difficulties sleeping: a natural part of growing older?

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“[There is a] common belief that sleep inescapably deteriorates with age ... A growing body of evidence, though, is calling this seemingly axiomatic belief into question.”

Aging has become a social, political and medical issue of great importance. Defining where normal aging differs from pathologic processes remains very challenging. A variety of systems and processes undergo expected degradation. For example, loss of skin elasticity, atrophy of muscles, reduction in bone density and alterations in sensory function in hearing, vision, taste and smell, all coincide with aging. Does sleep also deteriorate with age? In a landmark meta-analysis, Ohayon and colleagues documented age-related trends for objective sleep parameters, and noted decreasing total sleep time, sleep efficiency, slow wave sleep, rapid eye movement sleep and increasing sleep latency and wake after sleep onset [1]. Rates of insomnia are also known to be higher in older adults [2], and the risk for obstructive sleep apnea is also higher in older adults [3]. These findings, and others, have reinforced the common belief that sleep (a set of states during which processes critical to the regulation and maintenance of nearly all physiologic systems take place) inescapably deteriorates with age.

A growing body of evidence, though, is calling this seemingly axiomatic belief into question. Recently, our group published the largest study to date that investigated the relationship between age and sleep quality [4]. The data were collected in 2006 as part of the annual Behavioral Risk Factor Surveillance System [5]. Approximately 156,000 adults from 36 states/territories responded to survey items asking how often, in the past 2 weeks, the

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In memoriam This editorial is dedicated to the memory of our friend and colleague, Dr Nirav Patel MD MPH FCCP FAASM.

respondent experienced 'difficulty falling asleep, staying asleep or sleeping too much', or felt 'tired or had little energy'.

Intriguing patterns were uncovered when evaluating the prevalence of sleep disturbance and daytime tiredness by age. The complaints of sleep disturbance and daytime tiredness decreased with age, for both genders. The highest rates of sleep disturbance were seen in the youngest groups, with rates declining into the 30s, picking up again in middle age and declining again until they reach their lowest levels in the oldest groups. For daytime tiredness, this pattern was similar, except that rates climbed steadily again, starting from the age of 70 years. When adjusted for cofactors such as socioeconomic, demographics, access to healthcare and overall health, this pattern became even stronger, with the highest rates in the youngest adults, an increase in middle age (especially in women) and a decline in older age. Interestingly, the rise in daytime tiredness in older adults was completely explained by these cofactors (rather than age itself). These results demonstrated that not only was there no notable increase in sleep-related complaints in older adults, there was a general decrease, with the highest rates in the youngest adults. Furthermore, these results showed that sleep complaints and, especially, daytime tiredness in older adults, can be largely explained by socioeconomic, health and mental health factors, rather than the process of aging *per se*.

These findings are consonant with a growing literature that supports the notion that "growing old should not mean sleeping poorly" [6]. For example, Soldatos and colleagues found that, when those aged >65 years were compared to those aged <65, those >65 years reported more insomnia symptoms (i.e., difficulty falling asleep, frequent awakenings, early morning awakenings and daytime dysfunction), but fewer problems with sleep duration and daytime sleepiness [7]. There were no differences between groups on measures of overall sleep quality and general wellbeing.

Other studies have echoed these findings. Zilli and colleagues found that the prevalence of 'sufficient sleep' was higher in an older (age 65–99 years), compared to a younger group (age 19–20 years) [8]. Furthermore, the older group reported greater 'ease of awakening' and 'freshness after awakening', and no difference in 'ease of falling asleep'. This was despite lower scores for 'calmness of sleep', longer sleep latency, shorter sleep duration, greater awakening frequency and longer awakening durations. These findings support the idea that although sleep is quantitatively worse among the elderly when using objective measures, the perception of sleep is not notably worse and may, in some ways, be better.

The hypothesis that increased sleep problems among older adults are largely due to medical issues, rather than aging, is supported by a study by Vitiello and colleagues [9]. Among two separate cohorts of healthy, elderly research participants, the prevalence of sleep complaints was very low (3.15 and 1.35%). Interestingly, as subjects underwent levels of health screening, fewer and fewer sleep problems were reported as subjects were excluded for various medical reasons. Thus, in these relatively healthy samples, rates of poor sleep were very low, and the poor sleep that was detected existed in the context of other medical issues.

"Although many have reported objectively assessed changes in sleep patterns with age, many of these changes may not be perceived by the aged as problematic..."

Does sleep deteriorate with age? It seems relatively clear from the available evidence that objectively measured sleep tends to be more disturbed in older adults. Furthermore, common sleep disorders such as insomnia and sleep apnea (as well as rarer sleep disorders such as rapid eye movement sleep behavior disorder) are more prevalent among older adults. Despite this pattern, subjective experiences of sleep seem to be either equivalent to, or better than, younger adults. Also, although older adults experience more daytime dysfunction in general, healthy older adults are not more likely to report increased sleepiness or tiredness

during the day – on the contrary, they may report less. Although many have reported objectively assessed changes in sleep patterns with age, many of these changes may not be perceived by the aged as problematic based on subjective, self-reported data.

There are a number of potential reasons for this, which will need to be explored in future studies: older adults may be more likely to downplay difficulties with their sleep [10]; normative expectations of sleep appear to be different (older people may expect sleep problems); sleep problems may be diluted by the presence of other medical/psychiatric symptoms/conditions considered to be more important; older adults may develop better coping mechanisms that mask the degree of sleep difficulties; and there could be age-related differences in attitudes regarding the importance of sleep. Survivor effects may also play a role, as those with the most severe sleep problems in young adulthood may not have survived to old age. Other factors that might play a role include a more flexible sleep schedule among retired people and different patterns of psychosomatic stressors that may have a differential impact on sleep.

What are the practical ramifications of this finding? One important potential distinction is whether the complaint of poor sleep is elicited by the healthcare provider during a routine assessment, or whether it is the presenting complaint. While many older adults have objective evidence of impaired sleep, many do not complain of it, suggesting that there is a high threshold for bringing this to their healthcare provider's attention. That is, they may endorse insomnia on routine questioning, but are less likely to request an office visit primarily to discuss insomnia. When an older adult presents with complaints of poor sleep, it thus most likely reflects a significant concern for them that may warrant evaluation and treatment. Further research is warranted to examine this subjective/objective discrepancy as a function of age and its implications for clinical care.

In conclusion, although some aspects of sleep deteriorate with age, some aspects do not. The existing evidence suggests that subjective experience of poor sleep and/or daytime tiredness/sleepiness is relatively low among older adults, compared to younger adults, possibly due to an increased acceptance of objective sleep changes with aging. When insomnia rises in severity to the level that an older adult patient presents with this complaint, it may justify serious consideration.

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