COULD SLEEP HYGIENE PLAY A ROLE IN FOSTERING HEALTHY AGING BY PROMOTING SLEEP QUALITY?: A HYPOTHESIS

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Received: June 17, 2023
Accepted: July 27, 2023

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Abstract
Sleep disturbances or alterations in sleep patterns are commonly observed in older individuals as they age. Moreover, sleep problems may potentially contribute to the impairment of the healthy aging process, thereby leading to frailty in the geriatric population. The vicious cycle between sleep problems and aging can be broken by implementing sleep hygiene strategies that lead to improved sleep quality. The present hypothesis emphasizes that ensuring proper sleep hygiene can contribute to promoting healthy aging among older individuals.

Keywords: geriatrics; healthy aging; sleep habits; sleep hygiene; sleep quality.

How to cite: Gokcen N. Could Sleep Hygiene Play a Role in Fostering Healthy Aging by Promoting Sleep Quality?: A Hypothesis. Anti Aging East Eur 2023;2(2): 114-117  https://doi.org/10.56543/aaeeu.2023.2.2.07

Introduction
Aging represents a time-dependent progressive phenomenon that instigates a deterioration in the comprehensive functioning of the organism. Despite the conventional association of aging with a decline in capabilities, it is noteworthy that fostering and sustaining functional ability is attainable even in advanced age. Consequently, the World Health Organization (WHO) introduced the concept of healthy aging [1,2]. Healthy aging encompasses the dynamic process of cultivating and sustaining functional capacity, thereby facilitating a state of well-being during older age [2]. Genetic, environmental, and lifestyle factors are regarded as predictors of healthy aging [3]. In recent studies, researchers have examined these determinants and analyzed the impact of modifications in these factors on the progression of healthy aging [4-6]. In addition to dietary practices and physical exercise, sleep is also considered a crucial component contributing significantly to overall health and well-being [2].

Sleep and Aging
Sleep disturbances or alterations in sleep patterns progressively manifest in the geriatric population as they age. Notably, the principal sleep alterations in healthy older populations encompass a shift in sleep timing, impaired sleep maintenance, and diminished slow-wave sleep [7-9]. On the other hand, low sleep quality is accountable for various age-related conditions, such as cognitive impairment, muscle weakness, and decline in functional capacity. All these deteriorations stimulate frailty in the older population [2,10,11]. Although there is no sharp boundary in the causal
relationship between them, it is evident that sleep disturbances hold a prominent role in the aging process. Therefore, resolving sleep issues may potentially lead to the amelioration of age-related problems and the promotion of healthy aging.

Sleep and Healthy Aging

The sleep alterations observed in healthy older individuals encompass weakened or fragmented circadian sleep/wake rhythms, reduced total sleep time, increased unwanted wakefulness, diminished sleep efficiency, heightened instances of sleep interruptions and arousals, fewer and shorter rapid eye movements (REM), and non-rapid eye movement (NREM) cycles, as well as a decline in REM-related eye movement patterns and slow wave activity. From the perspective of elderly individuals, the most prevalent complaints pertain to prolonged periods of wakefulness during the night, light sleep, decreased total time spent asleep, early awakening, and excessive daytime sleepiness [7,10]. Even though age-related sleep changes are defined in almost all elderly individuals, merely 50% of older adults in good health report experiencing sleep troubles. Consequently, this demonstrates that even those who do not communicate sleep-related complaints experience reduced sleep efficiency and quality [7]. However, the prevalence of poor sleep quality and sleep distortion in healthy older adults has been reported to range from 3.8% to 64% [10].

Several studies have investigated sleep problems and sleep quality in healthy older people [12-14]. A study examining the association between sleep quality and memory in healthy older individuals revealed that both older age and poor sleep quality were linked to memory impairment, while age alone exhibited a correlation solely with habitual sleep efficiency [13]. Fjell et al. posited a hypothesis suggesting that there was a strong association between sleep patterns and cortical alterations in older people. Consequently, their findings indicated that diminished self-reported sleep quality and increased sleep disturbances were linked to heightened regional cortical thinning but not memory decline in individuals aged 60 years and older [15]. Furthermore, Tsiknia et al. demonstrated poor sleep quality in older people with age-related brain atrophy. This study revealed that sleep disturbances were associated with subtle microstructural brain injury, even when detectable volume loss or cortical thinning was not evident [16]. In a comprehensive national observational study, the authors demonstrated a notable surge in the prevalence of poor sleep quality and short sleep duration among older adults over 10 years. Accordingly, the researchers pointed out that the assessment of the sleep status of older people is important for the sleep health care of them [14].

Numerous studies similar to those mentioned above have confirmed that poor sleep quality is common in healthy older adults. However, studies focused on assessing the impact of sleep characteristics on healthy aging are scarce in the literature. A study conducted by Gkotzamanis et al. showed the negative effect of poor sleep quality and extended sleep duration on healthy aging. Consequently, the authors emphasized the significance of considering sleep characteristics in the context of the healthy aging process [2]. All in all, enhancing sleep quality and ensuring adequate sleep duration among older individuals may encourage healthy aging.

Hypothesis

This article hypothesizes that the sleep health status of older adults may be improved by accurate guidance on changing poor sleep habits. As a result, the provision of adequate sleep hygiene may also contribute to promoting healthy aging within the older population.

How to prove the effect of sleep hygiene on healthy aging?

To test a hypothesis, it is necessary to conduct observational and interventional studies. Particularly for the current hypothesis, longitudinal and randomized studies are required to closely examine the influence of modifications in sleep behavior and the efficacy of adequate sleep hygiene on promoting healthy aging [17,18]. Although a study was conducted to examine the impact of a multimodal lifestyle intervention, which included education on sleep hygiene, on the sleep status and cognitive function of geriatric individuals with mild cognitive impairment and sleep issues and this study showed that this intervention ameliorated subjective sleep quality, there is currently insufficient evidence to suggest that these strategies have a significant impact on the aging process [19].

To adequately demonstrate the influence of lifestyle changes on aging, it is imperative to utilize a substantial sample size, such as national databases. In its initial stages, to ensure precise and reliable outcomes, the study may involve the participation of healthy community-dwelling older adults. It is important to use validated and reliable tools when evaluating patients during research. The Pittsburgh Sleep Quality Index (PSQI) is a self-assessment tool that provides an easy way to evaluate sleep quality. This tool consists of seven subscales that measure subjective sleep quality, sleep latency, sleep duration, sleep efficiency,
sleep disturbances, use of sleeping medications, and daytime dysfunction [20-22]. Environmental and behavioral variables should be assessed by a validated tool, such as the sleep hygiene index (SHI). This index includes 13 items, with each question rating from 0 (never) to 4 (always). Subjects with higher scores exhibit more behaviors that undermine their sleep hygiene [23,24]. Of utmost significance, the evaluation of healthy aging may be executed by employing the ATHLOS (Aging Trajectories of Health–Longitudinal Opportunities and Synergies consortium) healthy aging scale, which encompasses 41 items referring to intrinsic capacity and functional ability. These characteristics cover a wide range of areas, including vitality, sensory skills, locomotion/mobility, cognition, activities, and instrumental activities of daily living [25]. After the evaluation of the study population, it is important to find suitable intervention methods, such as educating them about good sleep hygiene practices [19].

Ultimately, the most appropriate method to substantiate the accuracy of the current hypothesis is to conduct a longitudinal study, following all participants for an extended duration, to demonstrate the impact of enhanced sleep quality through sleep hygiene education on health status.

REFERENCES


Conclusion

Sleep disturbances and poor sleep quality should be taken into account while assessing the health status of older people. The aging process, in and of itself, elicits sleep-related difficulties. Nevertheless, it is crucial not to overlook the impact of sleep problems on age-related health issues and the healthy aging process. Consequently, this article emphasizes the significance of evaluating sleep quality and providing guidance to older individuals in enhancing their sleep hygiene. By doing so, the promotion of sufficient sleep hygiene can effectively ameliorate sleep quality, thereby fostering healthy aging.

CONFLICTS OF INTEREST

The author declares no conflicts of interest with respect to the authorship and/or publication of this article.


