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Letter to the Editor

Physical Activity-Induced Improvement in Sleep Quality in Elderly Individuals with Mild Cognitive Impairment

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Dear Editor-in-Chief

According to Statistics Korea, the country is projected to enter a super-aged society by 2024, with the proportion of the population aged ≥65 yr expected to increase to 19.2%. As of 2022, there were 92,300 individuals aged ≥65 yr diagnosed with dementia, comprising 10% of the total elderly population. Over the past 12 yr, the number of patients with dementia in this age group has increased by 256%, far outpacing the growth rate of the elderly population (68%) during the same period. This rapid increase underscores the need for preventive interventions to improve cognitive function among the elderly. Dementia is a far more severe condition than the typical memory loss associated with aging, as it impairs critical brain functions, such as language, memory, and behavior. Moreover, it has been shown to adversely affect not only brain function but also the ability to perform daily activities (1). Mild cognitive impairment (MCI) is a condition characterized by cognitive decline, particularly in memory, relative to individuals of the same age while preserving the ability to perform activities of daily living. It represents an intermediate stage between normal aging and dementia. Epidemiological studies have identified MCI as a high-risk condition for progression to dementia. Clinically, it holds significant importance as it represents the earliest detectable stage of dementia, offering a window for interventions that can maximize the effectiveness of treatments.

For the elderly, health-related quality of life extends beyond life satisfaction to encompass limitations in daily functioning, independence, and the ability to engage in social activities. Cognitive decline is a key factor that impedes the ability to perform everyday tasks, affecting independent living and social participation. Older Korean adults who did not meet the recommended levels of moderate-to-vigorous physical activity experienced nearly twice the cognitive decline compared to those who met the recommendations (2). Drug treatments for cognitive decline must consider the type of dementia and the patient's compliance. However, concerns about high costs and potential side effects have made non-drug treatments an increasingly preferred alternative. While previous studies on non-drug treatments have reported inconsistent outcomes when used as monotherapy, combined interventions—such as exercise and cognitive programs—have shown promise in improving cognitive function and enhancing the quality of life for older adults with MCI.

Acute sleep deprivation impairs memory encoding and consolidation, while short sleep duration

increases the risk of memory deficits (3). Furthermore, epidemiological studies have reported a statistically significant association between long sleep duration and memory deficits in both middle-aged and older adults, even after adjusting for comorbidities, anxiety, and depression. Memory might be affected by changes in sleep patterns. The neurobehavioral domain of executive function, which includes cognitive processes such as attention and memory, has emerged as a key focus in the literature on insomnia (4). This evidence underscores the role of sleep in influencing cognitive function.

Interventions involving physical activity and/or exercise to improve outcomes in elderly individuals with dementia and MCI have been extensively documented. Moreover, physical activity has been shown to improve sleep quality. Previous studies have highlighted the importance of increasing physical activity, alongside managing weight and liver function, in preventing insomnia. Specifically, engaging in moderate-to-vigorous physical activity is crucial due to its significant positive effects on weight loss and liver function improvement (5). In studies comparing physical activity groups to control groups, those who engaged in physical activity demonstrated significant improvements in sleep quality, sleep latency, sleep duration, daytime functional impairment, and sleep efficiency, as measured by the Pittsburgh Sleep Quality Index. Furthermore, combining aerobic physical activity with sleep hygiene education has proven to be an effective treatment approach for improving sleep quality, mood, and overall quality of life in older adults with chronic insomnia (6).

Regular physical activity and exercise effectively improve sleep quality and cognitive function in elderly individuals. However, most evidence focuses on the benefits of physical activity and/or exercise for either sleep quality or cognitive function. Limited research explores the impact of physical activity and/or exercise on elderly individuals with cognitive decline or dementia and poor sleep quality, highlighting the need for further study in this area.

Conflict of interest

The authors declare that there is no conflict of interests.

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