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Gender-specific link between sleep quality and body composition components: a cross-sectional study on the elderly

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Sleep duration has been associated with overweight/obesity. Since sleep quality and body composition alter during aging, we conducted this study to determine if sleep quality is linked to body composition components in elderly people. This is a cross-sectional study conducted on 305 Iranian community-dwelling elderly aged ≥ 65 years. Sleep quality and body composition components were evaluated using Pittsburgh sleep quality index and bioelectric impedance analysis, respectively. The association of sleep quality and body composition components was examined using linear regression analysis. The prevalence of poor sleep quality and overweight/obesity was 48.9% and 54.4% in men and 77.0% and 79.3% in women, respectively. Women had significantly higher scores in most PSQI items than men, indicating their worse sleep quality compared to men. Women also had significantly higher body mass index (BMI), body fat percentage, and visceral adipose tissue and lower skeletal muscle and fat-free mass percentages than men. In the adjusted regression model, men showed positive associations between the third tertile of poor sleep quality and BMI (B = 1.35; 95% CI 0.08–2.61) and waist circumference (B = 4.14; 95% CI 0.39–7.89), but they did not demonstrate an association between sleep quality and body composition components. In the adjusted regression model for women, there were positive associations for BMI (B = 1.21; 95% CI 0.34–2.07), waist circumference (B = 2.95; 95% CI 0.99–4.91), body fat percentage (B = 2.75; 95% CI 1.06–4.45), and visceral adipose tissue (B = 7.80; 95% CI 1.73–13.87); also there were negative associations for skeletal muscle (B = − 1.40; 95% CI − 2.39 – − 0.41) and fat-free mass (B = − 2.76; 95% CI − 4.46 – −1.07) percentages. Except for waist circumference, other variables differed between men and women (P < 0.001). Weight management, prevention of muscle wasting, and improvement of sleep quality should be considered in a consortium when designing healthcare strategies for the elderly.

Keywords Elderly, Sleep quality, Body composition, Skeletal muscle, Body fat percentage, Obesity, Gender

Sleep is a critical aspect of the biological life of humankind[1]. It is necessary for replenishing the energy and alertness for everyday activities and maintaining homeostasis, metabolism, and proper function of the brain and other organs of the body[2–4]. Not only sleep quantity, but also its quality has profound effects on our health[5]. Investigations in different parts of the world have shown that sleep deprivation is prevalent even among healthy individuals[6]. Reports show that adults have an average of 6.8 h sleep in weeknights and 7.8 h on weekends; 62% of adults do not feel they are getting enough sleep[7]. Poor or inadequate sleep has been associated with higher risks of cardiovascular diseases, depression, irritability, Alzheimer's disease, fall and bone fractures, and chronic pain[3].

The rate of aging is on the rise worldwide, and Iran is no exception. In this country, the speed of aging is one of the fastest in the world and more than 22% of Iranians are predicted to be over 65 years in 2050[8]. Sleep disorders are common among the elderly[9]. Aging is associated with difficulties in falling asleep, staying asleep, and having a deep sleep[9]. Studies in Iran have demonstrated overall poor sleep quality in older adults[10]. Therefore, it seems beneficial to assess the sleep status alongside other health-related factors in this population.

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