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Tytuł rozprawy doktorskiej: Sleep parameters, lifestyle factors and mental condition of adult men and women

Dziedzina: natural sciences

Dyscyplina: biological sciences

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Streszczenie w języku angielskim

Sleep is one of the basic physiological states found in most animal species, characterized by a reversible absence of consciousness and interaction with the environment. During sleep, there is a reduction in the activity of somatic systems and an increase in the activity of the central nervous system. In humans, it consists of two main stages: a stage of sleep with slow eye movements (Non-Rapid Eye Movement, NREM) and a stage during which rapid eye movements occur (REM). Healthy sleep is essential for proper functioning, as during it the regeneration of the entire body takes place, including the restoration of full cognitive abilities, the efficiency of the immune system or the consolidation of memory. At the same time, this complex biological phenomenon is influenced by many factors that act on a person on a daily basis.

The main aim of this study was to assess the variation in sleep quality of adult men and women according to their body build, their lifestyle and their mental condition. Additionally, the most important factors influencing sleep quality of men and women were identified.

The material consisted of questionnaire data and the results of polysomnographic examinations of 320 people (200 men and 120 women) who were referred by a specialist to the Polysomnographic Laboratory of the Stobrawskie Medical Center for diagnostic purposes. Data were collected from March 2020 to June 2023 (the study was suspended twice due to the pandemic). The polysomnographic study was conducted using the Nox A1 PSG System apparatus. It included electroencephalography (EEG), electrocardiography (ECG), electrooculogram (EOG), electromyography (EMG), pulse oximeter and actigraph. Microphone and breathing belts were used as well. The study lasted a maximum of eight hours, between 9:00 pm on the day of admission and 6:00 am the next day. In addition, the subjects completed a questionnaire, which included questions about age, gender, place of residence, lifestyle and psychological condition (CESD-R Depression Rating Scale, STAI

Trait and State Anxiety Inventory, PSS-10 Perceived Stress Scale). Prior to the polysomnographic study, participants' weight and height were measured. Mann-Whitney U-tests and Chi-square tests were used to compare parameters of males and females. Analyses were conducted separately for every gender and age was controlled. Multiple linear regression analysis was used to evaluate the associations of body weight and height with sleep parameters. Analysis of covariance was used to analyze the associations of socioeconomic status, lifestyle factors and mental health. Network analysis was used to identify the factors that were most strongly associated with chosen sleep parameters. Comparison of sleep parameters showed that the subjects did not differ in terms of sleep length and architecture, but men had a significantly higher prevalence of severe sleep apnea than women. Sleep quality of the subjects, regardless of their gender, deteriorated with age. Higher body weight was associated with longer and more effective sleep, but also with a higher prevalence of respiratory sleep disorders. Women with lower levels of education experienced more severe apnea and shortness of breath. The subjects' regular physical activity was associated with shorter and less effective sleep, but the severity of respiratory sleep disorders was lower in this group. Drinking alcohol and coffee was associated with more restless sleep, and smoking cigarettes was associated with greater hypoxia in the subjects. The use of sleep hygiene, primarily blue light filters and the interval between meals and sleep, was associated with better sleep quality. Subjects with higher levels of depression were characterized by lower severity of respiratory sleep disorders. Higher levels of anxiety and stress were found in subjects with more restless sleep. Regardless of age and gender, the factor that had the greatest impact on sleep quality was body weight.

The results of the study show that sleep quality is related to the body build, lifestyle and mental condition of the subjects. Higher body weight was probably associated with greater fat accumulation in the neck area, which promoted the collapse of the throat walls, causing more frequent apneas and shallow breathing. Lower socioeconomic status, especially lower levels of education, may have been associated with more anti-health behaviors, due to lower levels of knowledge about sleep hygiene. The use of stimulants, lack of sleep hygiene, and higher levels of stress and anxiety likely disrupted normal brain activity and stimulated the sympathetic nervous system, responsible for the fight or flight response. The factors that most strongly affect sleep are those that can be controlled. This shows that by lowering the weight, making changes in the lifestyle and sleep-related habits, it is possible to significantly improve the quality of sleep, and thus the quality of life.