Pharmacophore

ISSN-2229-5402

Journal home page: http://www.pharmacophorejournal.com

ETIOLOGY, PATHOPHYSIOLOGY AND AGE AND SEX CHARACTERISTICS OF INSOMNIA. REVIEW

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ARTICLE INFO

Received:
27 Mar 2023
Accepted:
16 Jul 2023

Keywords: Insomnia, Sleep, Age and sex differences in sleep, Comorbidity

ABSTRACT

The term “insomnia” refers to a clinical condition in which various kinds of sleep disorders are observed, which leads to increased fatigue, fatigue and irritability during the waking period. The disease can become a favorable ground for the development of other pathological conditions, for example, depression or hypertension. Depending on the leading symptom, insomnia is usually divided into several subtypes. Questions of the etiology and pathophysiology of the disease include a variety of combinations of genetic, environmental, physiological and behavioral factors. In the treatment of insomnia, it is worth giving preference to behavioral methods, the use of medications is indicated in some cases, provided that rational dosages with a limited duration are used. Since the disease is quite common, a huge number of studies are currently being conducted aimed at studying the pathological condition and creating new treatment tactics, while giving preference to the non-drug option. The article discusses various aspects of the etiology and pathophysiology of insomnia, as well as the role of gender and age on the characteristics of this pathological condition.

To Cite This Article: Abazov RA, Dukaeva KI, Tlekhuraeva MI, Mirgalimov VS, Khayrulaeva AA, Khachukaeva MR. Etiology, Pathophysiology and Age and Sex Characteristics of Insomnia. Review. Pharmacophore. 2023; 14(S1): e-723-7272

Introduction

Currently, it is considered that insomnia is divided into short-term, chronic or otherwise according to the third edition of the International Classification of Sleep [1]. The main criteria for the diagnosis of the disease are problems with falling asleep and/or maintaining a physiological sleep cycle, which leads to increased fatigue and irritability, lack of physical and psychological strength during the daytime. Mandatory conditions for making a diagnosis in the anamnesis are the presence of sufficient time for sleep, as well as the repetition of episodes of sleep disorder at least once a week with a total duration of 3 months or more [2]. A significant predisposing factor to the development of pathology can be called psychological stress against the background of any traumatic event in the patient's life. In this situation, there is a possibility of termination of insomnia in the event of the disappearance of the trigger, or if the patient copes with the adverse effects caused by it. Otherwise, the disease can turn into its chronic variant [3]. The importance of a correctly collected anamnesis and its constant addition is not overestimated in any way, since the cessation of constant conversations about the existing stress, provided that the

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symptoms remain, can confirm the very transition of the disease into its protracted stage. Keeping a patient's sleep diary allows you to identify hidden trigger factors that stimulate the manifestations of insomnia, as well as track the effectiveness of the therapy in order to change its tactics if necessary. The presence of concomitant diseases, the use of drugs or narcotic drugs can also play the role of an etiological factor [4-6].
Insomnia implies a complex of interactions between psychological arousal and violation of circadian and homeostatic mechanisms.

Sleep Stages
Physiologically, sleep is divided into several stages, following each other clearly:

1. Wakefulness (Stage W);
2. Relaxed wakefulness (stage N1);
3. Light sleep (stage N2);
4. Slow sleep (stage N3);
5. Fast sleep (stage R).

The stages of group N are phases of slow sleep, which is characterized by low activity of the cerebral cortex, and in stage R, on the contrary, high activity of the cortex is observed, dreams are formed at the same stage [7].
The sleep-wake cycle itself is a complex process in which the regulation of activity occurs during the operation of reciprocal systems by forming feedback from the ascending reticular activation system. Neurons of the lateral hypothalamus, which contain hypocretin and orexin, affect the excitation centers of the brain stem, thereby increasing their activity during wakefulness. This system is commonly called a switch, because only one of the two options is possible, excluding the possibility of their simultaneous activation. By switching, the prevailing state suppresses the second until circadian rhythms lead to the opposite situation. Also, the limbic system stimulates the state of wakefulness.
Circadian rhythms, as a rule, are designed for a 24-hour period, at the same time, various homeostatic factors have a direct reaction to the body's wakefulness by stimulating it to go to sleep. The ARAS system (The Ascending Reticular Activating System) existing in the brain increases its activity, the opposite effect is exerted by VLPR (the ventrolateral preoptic region). The first inactivates the second by acting on cholinergic neurons and orexin nuclei of the hypothalamus. The work of orexin is able to maintain both the state of vivacity of the body and its sound sleep for a long time [8, 9].

Diagnosis of Insomnia
When diagnosing insomnia, it is important to take into account gender and age characteristics. According to statistics, women are more predisposed to the development of the disease, starting from the onset of puberty and reaching their maximum risk during menopause, which can be associated with various kinds of hormonal changes. Elderly people are also prone to manifestations of insomnia due to the slowdown and distortion of the vast majority of processes in the body [10].
It is also worth mentioning some of the most vulnerable groups of patients to the disease, for example, military personnel. According to statistics, almost half are diagnosed with insomnia. Veterans diagnosed with post-traumatic stress disorder also complain about low amount and quality of sleep in 90% of cases [8].
The next vulnerable group are patients with a history of various kinds of traumatic brain injuries that can lead to manifestations of insomnia. An interesting fact is that the degree of decrease in the quality and quantity of sleep after a traumatic brain injury suggests further deterioration of the patient's symptoms. Such dependence can be used for more effective early detection of patients with unfavorable prognoses.
Another group with a very high risk of developing insomnia are people with alcohol and psychotropic addiction. The frequency of various sleep disorders under the condition of inadequate alcohol consumption ranges from 46% to 89%. About a third of people with addiction often consume alcohol-containing beverages in order to relieve insomnia, however, such an attempt at self-medication often leads to the development of tolerance of the patient's body and the appearance or relapse of alcoholism. Psychoactive substances, for example, contained in cannabis, have a sedative effect, to which resistance is also developed when used. Patients, in their attempts to overcome addiction, face the strongest manifestations of insomnia [11].
We conducted a study aimed at assessing the frequency of occurrence of insomnia phenomena and the quality of sleep in people of different age groups. A total of 64 people participated in the survey, who were assigned to one of three categories: persons under the age of 20, persons aged 20 to 40 and persons over 40 **(Figures 1-3)**.

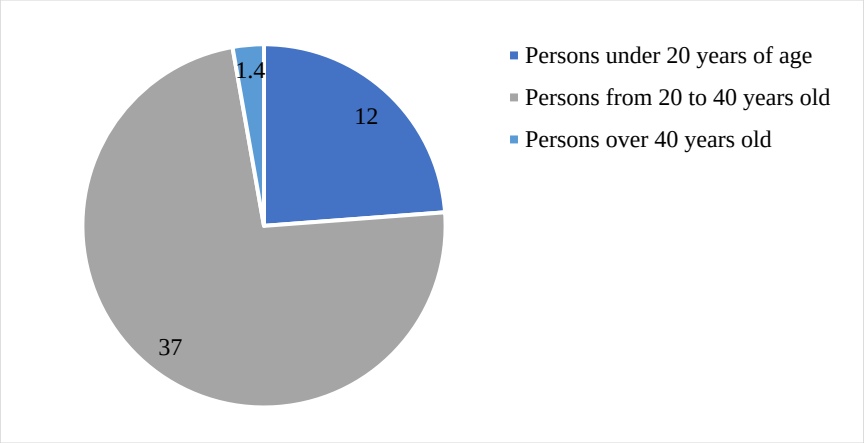

Figure 1. Distribution of respondents by age

The most numerous age group were persons in the range from 20 to 40 years - 57.8% (37 people). Persons under 20 years of age made up 18.8% (12 people), and persons over 40 years of age - 23.4% (15 people).
When asked about the frequency of insomnia phenomena in life, the following statistics were obtained: almost half of the respondents are not concerned about sleep disorders - 48.4% (31 people), 26.6% (17 people) meet with sleep disorders no more than twice a week, and 25% (16 people) - more than twice a week. According to the survey, people from the first group face the least insomnia phenomena, and most of all it is people aged 20 to 40 years. This fact can be attributed to the presence in this category of high levels of stress, experiences and bad habits aimed at relieving negative emotions.

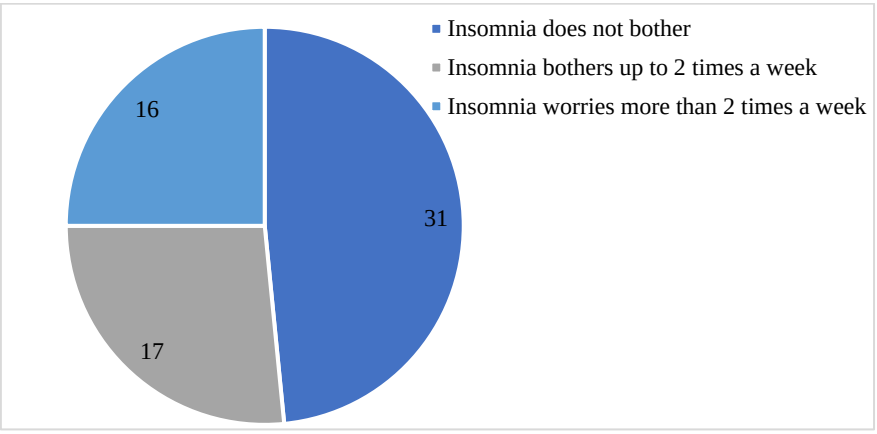

Figure 2. Frequency of sleepless nights among respondents, number of times a week

The last question was the assessment of satisfaction with the quality of sleep. The smallest number of people were completely satisfied - 9.4% (6 people), in turn, 29.7% (19 people) claimed that they were completely dissatisfied with the quality of their sleep. The largest group turned out to be people who could not give a clear answer, because the phenomena of insomnia occur only periodically, without significantly reducing the quality of life - 60.9% (39 people).

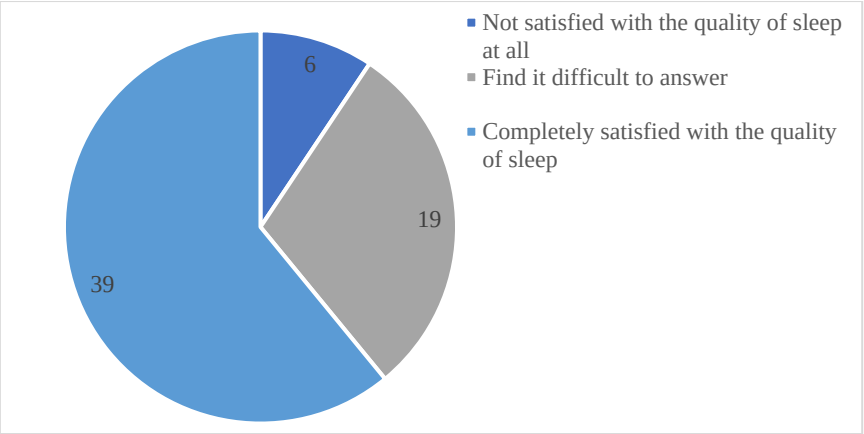

Figure 3. Satisfaction with sleep quality among respondents

Thanks to the data obtained, it can be concluded that people aged 20 to 40 years are most often found with manifestations of insomnia, a very small number of them can state their absolute satisfaction with sleep. This fact can have adverse effects on human health and the quality of his life in general, reducing his performance and resistance to stress factors.

Conclusion

To date, insomnia is one of the most common sleep disorders found in all segments of the population. Diagnosis of pathology is based on a true and carefully collected history of human life and health, because it is this approach that allows you to identify its etiological factor and choose the appropriate tactics for the management of the patient. Insomnia can significantly reduce the quality of life, because it does not allow a person to fully function throughout his day, reducing both cognitive functions and physical capabilities. The leading risk factors remain gender and age, giving preference to the female sex and the elderly. Concomitant pathologies, of course, can also significantly increase the chances of the development and aggravation of the disease.

Acknowledgments: The authors contributed in the work equally.

Conflict of interest: None

Financial support: None

Ethics statement: None

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