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Impact of Insomnia on Humans and Measures

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Abstract: With the expansion of the insomnia community and the rise in consumption levels, the sleep economy is growing rapidly, and more people are demanding solutions to their insomnia. This article analyses the causes and effects of insomnia, also measures to address the problem. The causes of insomnia are broadly divided into three parts, namely mental illness, physical and medication factors. If insomnia is left unresolved for a long time, the patient's physical and emotional well-being can be seriously affected. Medication is obviously the most effective measure for insomnia, but because of its side effects, non-pharmacological measures have been developed to improve it. The purpose of this article is to provide a better understanding of the causes and effects of insomnia, as well as a summary of previous research into the treatment of insomnia, so that readers can gain a more intuitive understanding of the subject and save time searching for information.

Keywords: insomnia, REM sleep, anxiolytic

1. Introduction

With the expansion of the insomnia community and the rise in consumption levels, the sleep economy is growing rapidly and the need for solutions to insomnia is increasing. Adequate sleep, a balanced diet and appropriate exercise are the 3 internationally recognized standards of health. Sleep, as a necessary process for life, is an essential part of the body's recovery, integration and consolidation of memories, and is an indispensable component of a healthy room. However, there is a general lack of awareness of the importance of sleep. According to a survey by the World Health Organization, 27% of people have sleep problems of varying degrees, and the incidence of insomnia among Chinese adults is 38.2%, higher than in developed countries.

It has been written, and still very much so, that studies have been done on the effects of insomnia on humans. The purpose of this paper is to enable more people to reduce insomnia, to learn what can be done about insomnia, to recognize the effects of insomnia on humans and to know the causes of insomnia. There are now both pharmacological and non-pharmacological measures. Non-pharmacological measures are preferable to pharmacological measures because they are not harmful to the body and do not damage the organs. Non-pharmacological measures can reduce insomnia by simply doing them in the free time, but only if people have to take medication is it recommended.

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The main aim of this article is to highlight the effects of insomnia on human beings. Firstly, outlining the three causes of insomnia, namely mental illness, physical and psychological factors. And then analyze the effects of insomnia on humans and conclude that insomnia is associated with several symptoms, such as weight gain, diabetes, heart disease and emotional problems. Finally, the measures to address insomnia were sorted out and two types of measures were listed, namely pharmacological and non-pharmacological measures. The Research goal is to Improve the quality of people's sleep and their quality of life can benefit people who suffer from insomnia and have difficulty falling asleep.

2. Reasons of Insomnia

Insomnia is caused by various reasons that people have difficulty falling asleep at night, sleep restlessly. People may wake up easily in the middle of sleep or wake up early in the morning; have low sleep quality; have significantly less sleep time. In severe cases, people stay up all night. Insomnia has a great impact on the mental and physical strength of people. It directly affects the quality of life and leads to the occurrence, development and aggravation of many diseases. Insomnia is also associated with a variety of diseases, and is a major enemy of health [1]. There are many factors that can contribute to insomnia. In this article, these factors are broadly grouped into the following categories.

2.1. Mental Illness Factors

According to this study, people with schizophrenia and depression had more severe sleep disturbances, and some sleep indices in people with schizophrenia and depression were significantly different from those in normal adults. Thus, it was shown that the quality of sleep of schizophrenic and depressed patients is much lower than that of normal adults.

Patients with schizophrenia and depression can experience abnormalities in rapid eye movement (REM) sleep. This is characterized by an increase in the average duration of REM sleep and an increase in its frequency. In contrast, the latency period of REM sleep is shortened. Some studies have shown that The Hamill Depression Scale scores are significantly correlated with the latency of REM sleep. In general, an increase in the Hamill Depression Scale score leads to a shortening of the latency period. An increase in the Hamill Depression Scale score generally leads to a shortening of the latency period and a high tendency to develop REM sleep in the sleep state. It is believed that REM sleep is caused by the patient's pons. The clinical view is that REM sleep is controlled by cholinergic cells in the pontine reticular formation of the brain. The cholinergic cells enable REM sleep and the Serotonin (5-HT) nerve cells inhibit REM sleep, thus achieving a blocking effect.

The deep sleep period is the third stage of non-REM sleep and during this period, schizophrenia and depression have been shown to be associated with a reduction in the average duration of deep sleep and in the number and duration of delta waves. The findings show that during this period, schizophrenics and depressed patients experience a reduction in the average duration of deep sleep and a reduction in the number and duration of delta waves. The study showed that during this period, schizophrenics and depressed patients experienced a reduction in the mean duration of deep sleep and a reduction in the number and duration of delta waves. Several studies have reported that patients with schizophrenia who did not take their medication in a timely manner during the onset of the illness may experience some degree of shortened deep sleep time in addition to shortened REM sleep latency and reduced sleep duration. This may be related to the pathogenic mechanism of the disorder [2].

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2.2. Physiological Factors

According to the statistics, the total sleep time of the elderly increases with age. The normal sleep of the elderly is often affected by a variety of factors that lead to insomnia, and it is mainly manifested in the form of difficulty in falling asleep, easy awakening and early awakening. All three can occur separately. They can also exist in combination [1].

Insomnia is also related to a person's hormone levels. Insomnia disorders, especially frequent nighttime awakenings, are one of the major problems during the menopausal process in postmenopausal women, with the prevalence of menopause-related insomnia in postmenopausal women ranging from 43% to 48%. Insomnia affects middle-aged women significantly, with sleep difficulties increasing as women approach menopause [3].

In national and international studies on hormones and sleep, androgen secretion has been found to be associated with fast-acting eye sleep during sleep, and increased serum testosterone levels are associated with the onset of the first REM sleep. One study on the association of testosterone with sleep architecture in menopausal women found that women with the lowest total testosterone levels at baseline spent more time awake after falling asleep than women in the highest quartile. the lower the testosterone level, the longer the time spent awake at night [4-5]. It is assumed that the testosterone rhythm is disturbed by excessive REM sleep awakenings and that the nocturnal rise in testosterone rhythm is significantly reduced in patients with REM sleep deprivation. In the present study, a negative correlation was found between the duration of insomnia and serum testosterone, i.e., the longer the duration of insomnia, the lower the testosterone level. Combined with the results of previous studies, it is considered that testosterone may indicate the severity of sleep in some menopausal women [3].

2.3. Drug Factors

The use of certain drugs such as central nervous system stimulants, diuretics, ephedrine, aminophylline, etc. can cause insomnia during treatment. At the same time, long-term use of sedative and sleeping drugs, drug withdrawal symptoms can occur after discontinuation, resulting in a relative reduction in REM sleep, causing "rebound insomnia.

The drug withdrawal symptoms may occur after stopping the drug, resulting in a relative decrease in REM sleep, causing "rebound insomnia" [6]. The effectiveness of different antidepressants in improving sleep disturbance in depressed patients varies, and some of them can even worsen and exacerbate the sleep disturbance in patients. Chlorpromazine and antiphenobarbital are common antidepressants, which are mainly used for their antidepressant effects by inhibiting fast-acting sleep, but there are other drugs such as trazodone and mianserin that do not have an anti-sleep disorder effect, but only a sedative effect. Studies have shown that most antidepressants do not increase the average length of deep sleep periods, which is not conducive to an improvement in the patient's substantive sleep state [2].

3. Impacts of Insomnia

3.1. Weight Gain

Getting less than 7 hours of sleep a night may make people more likely to put on weight. Scientists believe this may be because lack of sleep affects the hormones that control hunger and satiety. Chronic lack of sleep can make people more likely to develop obesity and related health problems.

When people sleep less than 7 hours, sleep affects obesity. The shorter the sleep duration, the higher the obesity level, which usually measured by body mass index (BMI). One prospective study was a 13-year cohort study of nearly 500 adults. Those who slept for less than six hours had a BMI

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7.5 times higher [7]. A large population study based on more than 1,000 adults found a U-shaped relationship between sleep duration and BMI. The study measured two appetite-related hormones and found that sleep deprivation increased appetite. Sleep deprivation was associated with lower levels of leptin and higher levels of growth hormone-releasing peptide, a peptide that stimulates appetite [8]. Sleep deprivation can lead to lower levels of leptin and higher levels of growth hormone-releasing peptides [9]. Research suggests that hormone-induced increased appetite may help explain why lack of sleep has been linked to obesity [9].

3.2. Diabetes Mellitus

The way the body handles blood sugar is also affected by frequent insomnia. Frequent insomnia can lead to impaired glucose tolerance. Adults who sleep no more than 5 hours a night are 2.5 times more likely to develop diabetes than those who sleep 7-8 hours and 1.7 times more likely to have insomnia than those who sleep 6 hours. The effect disappears when sleep returns to normal.

3.3. Heart Disease

Chronic insomnia also has potential effects on cardiovascular health. Just one night of sleep deprivation in healthy adults can lead to elevated blood pressure and an increased chance of heart attack. After adjusting for age, body mass index, smoking and snoring, no more than five hours of sleep in adult men was associated with a 45% increased risk of fatal heart disease.

3.4. Emotional Problems

Prolonged insomnia can lead to more extreme moods resembling anxiety or depression as opposed to one or two nights of insomnia, and studies of adolescents have shown that sleep deprivation can lead to depression five times more often than normal. On the other hand, a study of more than 2,200 secondary school students (11 to 14 years old) showed that chronic sleep deprivation and more symptoms of depression were associated with lower self-esteem.

3.5. Decreased Interest in Sex

Chronic insomnia affects the hormones that control libido, and studies have found that men who lose sleep in the latter part of the night lower their testosterone levels in the morning.

3.6. Weaker Immune System

Chronic insomnia affects the body's ability to release proteins that defend against disease and inflammation, as well as reduce antibodies and cells that fight infection, making people who are sleep deprived more susceptible to infectious diseases.

3.7. Higher Risk of Accidents

Chronic insomnia can lead to fatigue and poor concentration, which can increase the chances of having an accident. In a study of more than 900 truck drivers, the results showed that people with insomnia were twice as likely to have accidents as others.

3.8. Brain Performance

Occasional insomnia then "brain fog" can get worse over time. Chronic insomnia can lead to decreased memory and concentration, making it difficult to make good decisions. Studies have shown

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that if people sleep only five hours a night for a week, their judgment decreases and more risky behaviors occur.

3.9. Fatigue

Chronic insomnia can lead to fatigue that affects daily work and family life and is sometimes accompanied by headaches, dizziness and muscle aches and weakness. Fig. 1 is the insomnia with normal and short sleep duration

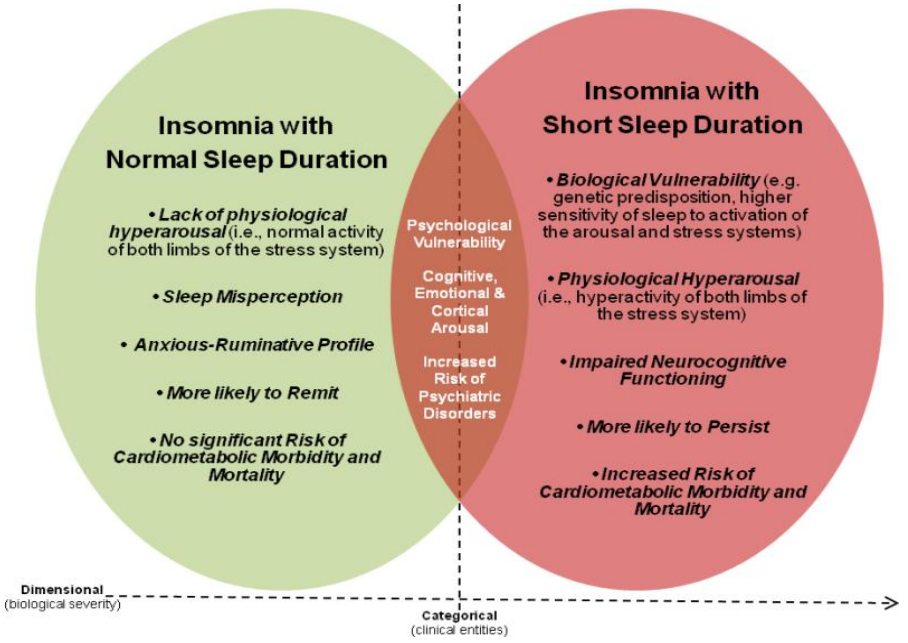

Figure 1: Insomnia with normal and short sleep duration [11].

4. Measures of Insomnia

4.1. Drug Measures

In ancient times, opium and alcohol were used to improve sleep. In the 19th century, morphine, potassium sniffing and hydrated aldehydes were used to enhance sleep. Although all of these substances can induce sleep, there is a risk of tolerance, withdrawal symptoms and overdose. Modern pharmacological treatments for insomnia began in the 1950s and 60s. Safer drugs such as Benzedrine and Sildenafil were introduced. However, these drugs also had problems with tolerance, abuse and overdose. Benzodiazepine receptor agonists, the first benzodiazepine anxiolytic, sleepiltone, was used in the 1960s. Other benzodiazepine agonists followed, with the best-known one, diazepam, being introduced in 1963. In the 1980s, benzodiazepine agonists with a different chemical structure to benzodiazepines, such as levopiridone and zolpidem, were introduced [10]. Tricyclicantidepressant (TCA) and trazodone can be used for insomnia mainly because of their anti-limbic side effects which can improve sleep. TCA and trazodone can be used for insomnia mainly because their anti-limbing side effects can improve sleep, and they are inexpensive and not prescription restricted and are not controlled substances. The use of antidepressants for insomnia is controversial. However, there is more agreement that very low doses should be applied. For example, trazodone is used at doses of 300-400 mg/day for depression and only 50-100 mg/day for insomnia. Of course, these drugs are not indications for the treatment of insomnia and it is more difficult to agree on the dose to be used in the treatment of insomnia. The efficacy of TCA and other antidepressants for insomnia has not been

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systematically studied. Walsh et al. compared the efficacy of trazodone and zolpidem in 306 cases of primary insomnia. Patients were randomly to a trazodone group of 50 mg/day, a zolpidem group of 10 mg/day and a placebo group for 14 days. After one week of treatment, the trazodone and zolpidem groups showed reduction in sleep latency compared to the placebo group, while trazodone showed no significant difference. In terms of sleep duration, there was no difference between the zolpidem and trazodone groups at the end of the 2 weeks period. The results of some of the studies suggest that antidepressants are not as effective as expected in the long term in treating insomnia. A major problem with the use of antidepressants in the treatment of insomnia is the side effects of the drugs. Selective Serotonin Reuptake Inhibitor(s) (SSRIs) and TCAs, trazodone, etc. have been associated with suicidal warnings in the treatment of depression, in addition to headache, nausea, cardiovascular, sleepiness, abnormal penile erections, falls due to postural hypotension and fatal overdose [10]. So, it is true that drugs can actually treat the symptoms of insomnia, but they can also have some negative effects on the body.

4.2. Non-drug Measures

Get some sun in the morning. Control tonnage and be aware of the effects on sleep at night. Try not to drink coffee. Avoid alcohol before going to bed and exercise in the afternoon if people are too full, but not before going to bed. Reduce noise, light and high temperatures during sleep. Reduce disturbances and interruptions during sleep Read in bed if relaxing, with low light and appropriate content. It is good practice to go to bed at regular intervals. When the patient starts treatment, it is more important to get up regularly and to receive sunlight. It is better to go to bed at regular intervals than at regular times when sleep is available. Patients who have been practising sleep hygiene for an early period will be able to sleep at regular intervals. Patients should be educated about the effects of napping on sleep and that napping reduces the patient's ability to fall asleep and maintain sleep. However, if napping increases the patient's alertness and energy in the afternoon and evening, this is acceptable. Educate the patient on how to prepare for sleep. Stop caffeine several hours before going to bed, avoid alcohol and overeating. Encourage exercise, but not a few hours before going to bed. Patients are surprised to be told that they should not exercise before bedtime, often believing that post-exercise fatigue is conducive to sleep, when in fact exercise can cause at least a brief period of alertness and affect some of the regular factors of sleep, such as body temperature. Avoid activities that can cause mental arousal before bedtime. All activities increase mental and emotional arousal and thus interfere with falling asleep. The sleep environment is also crucial. The bedroom should be quiet, dark and as comfortable as possible. The patient is not fully aware of the effects and disturbances of light, noise, temperature regulation or other members of the family or even pets. The sufferer's sleep may be disturbed by a partner waking up, lights coming on, or family members in a neighboring room getting up early to work or pets moving around. Doctors should encourage patients to reduce distractions from all sources [10]. Thus, if people do this, people will not experience insomnia as these are painless and the quickest and most appropriate non-pharmacological treatments.

5. Conclusion

Sleep deprivation and sleep disorders are among the most common but often neglected and easily treatable health problems, and with the prevalence of insomnia, they have a negative impact on people's health and longevity. The causes of insomnia, its effects on human physiology and psychology, and measures to avoid insomnia are discussed throughout the paper. First, people with psychiatric disorders such as schizophrenia and depression/the elderly/and people taking certain medications often suffer from insomnia and have difficulty achieving deep sleep for long periods of time. Secondly, insomnia can have not only psychological but also physical effects, and in more

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serious cases, it can even affect people's daily life or even lose their lives. Thirdly, as to how to improve insomnia and sleep, people have used opium, opium and many plants to improve sleep from ancient times to the present, but many drugs can have a negative impact on the body and mind, so people have discovered non-drug measures to improve sleep.

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