PHARMACOTHERAPY ONLY? OVERVIEW OF AVAILABLE TREATMENTS FOR SLEEP DISORDERS

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ABSTRACT

Sleep disorders are one of the most common disorders of human well-being. They cause numerous health consequences, such as attention disorders, memory and recall difficulties, and motor disorders. The diagnosis of sleep disorders and the selection of the appropriate form of treatment is essential for helping patients. Current medicine offers many therapeutic options using pharmacological and non-pharmacological methods. During the treatment process, it is advisable to make changes in life hygiene and sometimes pharmacological support is necessary. This article reviews the available treatments for sleep disorders and provides a brief description of each. Aspects of sleep hygiene, relaxation training, psychotherapy, biofeedback, non-invasive brain stimulation methods, and the basic groups of drugs used in treatment, e.g. antidepressants, neuroleptics, benzodiazepines, and non-benzodiazepine GABA receptor agonists, are included.
Key words: sleep, sleep disorders, treatment.

INTRODUCTION

Sleep plays an indispensable role in daily functioning and maintaining good health, and sleep disorders are a widespread and significant problem in modern societies. Sleep disorders have serious consequences, ranging from impaired attention and concentration and reduced productivity to long-term effects on health and quality of life [1]. Sleep disorders can result from quantitative disorders related to sleep duration, qualitative disorders (related to sleep depth), or abnormal sleep and wake behaviour. Sleep disorders can occur as single episodes or as a chronic condition [1, 2].

The correct classification of sleep disorders is essential for their diagnosis, and the implementation of the correct form of therapy and intervention is crucial for patient care.

An analysis of the literature on possible therapeutic approaches for sleep disorders including pharmacological and non-pharmacological methods was carried out. A description of the individual effects of forms of support is presented, with particular attention paid to patient education, relaxation, and basic forms of psychological support that can be used in nursing work.

The aim of this paper is to review pharmacological and non-pharmacological interventions in the treatment of sleep disorders.

TREATMENT OPTIONS FOR SLEEP DISORDERS

The cornerstone of the treatment of sleep disorders is the taking of a detailed medical history, supplemented by a family history [1-4]. Before starting treatment, it is important to gather accurate information about the problems that are present and the possible causes of the problems. Attention should be paid to the person's characteristic sleep pattern and duration, taking into account individual differences (length of sleep, usual time of falling asleep and waking up). It is necessary to collect information about chronic diseases and disorders that accompany the

sleep process, such as snoring or behavioural disturbances during night rest [1, 3, 5]. The interview also includes questions to assess the severity of stressors, pharmacotherapy used, use or abuse of psychoactive substances, environmental factors, and psychiatric history [6-8]. It is important to remember that sleep disturbance is a common symptom of psychiatric disorders and illnesses, often being the first or most noticeable symptom for the patient. In some cases, it is a symptom that masks other symptoms, so that the patient is unaware of the presence of other problems [1-5, 9, 10].

Non-pharmacological methods for sleep disorders

Non-pharmacological methods are based on interactions other than pharmacological ones and include the following: attention to sleep hygiene, awareness of the interaction between various environmental factors and sleep disturbances, relaxation training, psychotherapy, biofeedback, and adequate diet and physical activity [1-4].

The characteristics of the different support methods are outlined below.

Sleep diary

This is one of the main methods used in the initial treatment of sleep disorders. Keeping a sleep diary increases awareness of the interactions between certain events that precede night rest and sleep [11]. A reliably kept sleep diary is also a very good source of information for the specialist about the disorders present.

The diary should be kept in a notebook. Several important items should be included, e.g. dominant emotions during the day, emotions just before sleep, activities before sleep, time of going to bed, total sleep time, number of waking episodes during the night, time from going to bed to falling asleep, medications taken, rating of sleep quality and feeling of rest on waking, and functioning in the morning [11, 12]. These records should be kept for about 7-14 days. The information they contain, although subjective, allows some recurring patterns to be identified and the source of the problem to be located. It is also a good way of monitoring the effectiveness of the support methods introduced. The sleep diary method is often used in psychotherapeutic work [11, 12].

Psychotherapy

Psychotherapy is a process that uses psychological methods to help people with different types of problems. It is one of the mainstays of treatment for mental disorders, but it is also used to develop personality, improve well-being, and develop social skills [13]. During psychotherapy, people change their coping patterns and learn new, effective ways of dealing with emotions, thoughts, and distressing behaviours. The techniques used in psychotherapy are based on scientific research [14].

The best documented form of psychotherapy is cognitive behavioural therapy (CBT). It is one of the main forms of help for various disorders and life difficulties [15]. It is also recommended as the primary treatment for sleep disorders. The American Psychiatric Association recommends CBT as a first-line treatment for all patients with insomnia and other sleep disorders, especially when these disorders are associated with other medical conditions [15, 16]. This form of therapy has been shown to be highly effective in patients of different ages. Studies show that psychotherapy is as effective as pharmacotherapy and that its effects last much longer than those of sleep medications [15, 16]. Importantly, cognitive behavioural psychotherapy has been shown to be highly effective in patients over the age of 55 years, which is important information given the high risk of interaction between sleep medications and other medications used to treat chronic conditions [15, 16].

The importance of sleep hygiene, stimulus control procedures, and cognitive techniques are discussed in the psychotherapy process. Attention is given to dysfunctional behaviours and beliefs about sleep that contribute to disorders [14-16]. Over the course of psychotherapy, dysfunctional beliefs are modified and replaced with more adaptive beliefs, allowing for improved functioning [14-16]. The main issues addressed in CBT are sleep drive dysregulation, sleep-related anxiety, and the practice of sleep-disruptive behaviours.

Cognitive-behavioural psychotherapy is one of the shortest and quickest forms of treatment [15]. In the treatment of sleep disorders, it is advisable to have 8-10 sessions per week (each session usually lasts 50 minutes) [16]. This length of therapy should allow the patient to gain new skills, eliminate inappropriate beliefs, and replace them with new ways of coping. The potential benefits are without side-effects, and its high effectiveness is due to its causal rather than symptomatic effects [1, 15, 16]. The main argument against the use of psychotherapy for sleep disorders is the delayed onset of action. The fact is that it takes 3 to 4 weeks of psychotherapy to see improvement, and this is a major barrier to its use for many people. Nevertheless, CBT is a more effective form of help in the long term, which argues in favour of its use [15, 16].

In addition to cognitive behavioural psychotherapy, other treatments are used to treat sleep problems. These have less research evidence, but psychotherapeutic practice shows that they are an effective form of help. These include long-term psychodynamic

psychotherapy and humanistic, solution-focused, gestalt, and systemic psychotherapy [14].

Non-invasive methods of brain stimulation

Non-invasive methods of brain stimulation are increasingly used to modulate the activity of the nervous system [17]. These methods include transcranial direct current stimulation, transcranial alternating current stimulation, and thermal stimulation [17, 18].

Transcranial electrical stimulation is considered a safe method and can be used in patients of different ages. The only contraindications to the use of this therapeutic method are the presence of foreign bodies in the patient's body and an implanted cardiac pacemaker [17]. This therapeutic method involves at least several sessions of active stimulation (5-10 sessions). The only side effects observed are skin irritation and redness, and a burning or tingling sensation in the stimulation area [17].

Direct current brain modulation involves applying 2 electrodes (anode and cathode) to specific regions of the brain and subjecting them to a flowing current of very low intensity (0.5-4.0 mA) [18]. As a result of this procedure, approximately 45% of the total current dose reaches the brain tissue, which is sufficient to modulate regional neuronal activity. Depending on the polarity (anode or cathode) of the electrode placed in a specific area of the brain, there is a change in the resting potential of neurons, leading to an increase or decrease in the efficiency of synaptic conduction [17, 18].

Transcranial Alternating Current Stimulation is characterised by the use of a sinusoidal current with specific frequency parameters. Such stimulation modulates endogenous brain oscillations and influences the activity and excitability of the cerebral cortex (increases the flow of information between nerve cells) [17, 18].

Non-invasive methods of brain stimulation have shown efficacy in the treatment of addiction, anxiety, and sleep disorders [17, 18].

Stimulus control therapy

Stimulus control therapy is based on the premise that sleep disturbance (especially insomnia) is a conditioned response to environmental (time spent in bedroom/bed) or temporal (bedtime) factors normally associated with sleep [19]. This method is often used in psychotherapy. The aim is to develop the habit of spending time in bed only during sleep or sexual activity [15, 16].

When sleep is disturbed and time spent in bed is long, the insomnia process is associated with fear, anger, and frustration [20]. These emotions arise as a result of the difficulty in falling asleep. This creates a cycle in which sleep deprivation triggers negative emotions, making it even harder to fall asleep [20]. The aim of stimulus control therapy is to break this negative cycle. According to this method, a change of location (getting out of bed and going to the living room/kitchen) is suggested when sleep difficulties occur [15, 16]. Getting out of bed should be done after about 20 minutes of difficulty falling asleep. Staying in a different place, such as an armchair in the living room, should be used for activities that normally allow you to relax (listening to quiet music, reading a book, doing a puzzle) [20, 21]. Sources of blue light should be avoided, and watching TV or using a laptop or smartphone is not recommended. The time you spend doing these activities should be for as long as you feel tired and sleepy. You should then go back to bed and try to fall asleep. If you are not able to fall asleep after another 20 minutes, you should repeat the whole process (get up, do relaxing activities, go back to bed and try to fall asleep) [20, 21].

When using this therapy, it is important to monitor yourself and be aware of the activities you are doing that are disrupting your sleep [14-16]. A basic recommendation relates to the timing of going to bed – this should only be done when you feel sleepy and tired. Self-observation should also raise awareness that exposure to blue light and activities that increase alertness immediately before going to bed makes it more difficult to fall asleep [16, 20]. No activities other than sleep and sexual activity should be performed in bed. The negative habit of working in bed – writing work reports or emails – should be broken. Feelings of stress should also be reduced (it is advisable to avoid constantly looking at the clock and counting down the time left until the scheduled wake-up time during sleep disturbances) [20, 21]. Some cognitive restructuring is used here, which involves getting used to the greatest fear associated with sleep deprivation: insomnia [14-16, 20].

Stimulus control therapy allows you to change harmful habits and learn new techniques to improve sleep quality. Studies have shown that practising this method reduces the time between going to bed and falling asleep. However, it is important to remember that this is a method that takes several days of practice to achieve the expected results [14-16, 20, 21].

Relaxation training

Relaxation training comprises a group of techniques designed to reduce stress and anxiety and improve daily functioning. The most popular relaxation techniques include the following [22, 23]:

- breathing techniques,
- Shultz autogenic training (relaxation combined with a feeling of heaviness and warmth),
- Jacobson training (progressive contraction and relaxation of specific muscles),

- meditation,
- visualisation,
- music therapy – techniques using individual sounds and music to achieve a state of bliss and relaxation.

The above methods can be used with people of all ages. Scientific research shows that they are safe and effective. Systematic relaxation training has been shown to reduce anxiety levels, lower blood pressure, reduce the frequency of psychosomatic disorders, and stabilise sleep function [22, 23].

Biofeedback

Biofeedback is a non-invasive therapeutic method that involves monitoring physiological changes in the body and providing feedback to the changes that occur [24]. It is referred to in the literature as biological feedback. The analysis of physiological changes and their graphical recording, e.g. by means of a measurement computer system, allows patients to consciously modify functions that are normally not subject to control, such as brain waves [25]. For some disorders, this method is the only form of treatment or an adjunct to pharmacotherapy. The literature provides evidence of its efficacy and high safety [24, 25]. To date, no side effects of biofeedback have been observed, and it can therefore be used in all age groups. Disadvantages of this method include the dependence of its effectiveness on the individual characteristics of the patient (lack of motivation and low sense of responsibility for the therapy prevent satisfactory results) [24, 25].

Teaching the patient the basic principles of sleep hygiene

Non-pharmacological methods of treating sleep disorders are also based on increasing the patient's knowledge of certain behaviours that hinder or promote the maintenance of a good night's rest [26, 27]. Recommendations for good sleep hygiene include the following [26, 27]:

- limiting the use of stimulants (caffeine, tobacco, alcohol) to the afternoon or early afternoon (about 4-6 hours before bedtime) and a complete ban on the use of narcotics and legal highs,
- avoid alcohol and other psychoactive substances as sleep aids,
- keep a consistent bedtime and wake-up time (even on days off),
- regular physical activity (strenuous exercise up to a maximum of 3 hours before bedtime), low-intensity physical activity (walking) up to an hour before bedtime,
- avoid conflict situations and strong emotional arousal before bedtime,
- avoid internal discussions and "summing up the day", which can cause anxiety, apprehension, and racing thoughts,
- finish work at least one hour before going to bed,
- avoid exposure to blue light (TV, laptop, phone) one hour before bedtime,
- practising relaxation techniques, doing activities that reduce stress and tension, such as reading books,
- avoid worrying before bed and focus your thoughts on the positive aspects of the day ahead,
- limit exposure to noise, light, and uncomfortable temperatures,
- avoiding heavy meals before bedtime or going to bed hungry, the last meal should be eaten 2-3 hours before bedtime,
- spend time in bed only at the time of planned sleep or sexual activity,
- limit time spent in bed to the average estimated sleep time.

Light treatment (phototherapy)

Phototherapy is one of the main methods used to treat sleep-wake rhythm disorders (sudden time zone change syndrome, accelerated sleep phase syndrome, delayed sleep phase syndrome). The treatment uses a natural or artificial light source of a specific intensity [28]. Special lamps that provide bright light but are free of harmful ultraviolet light are commonly used. It is recommended that the phototherapy session should take place within a short time of waking to allow for the regulation of circadian rhythms [29]. Each session should last about 30-40 minutes [28]. For people with an accelerated sleep phase, it is recommended that they be exposed to bright light (10,000 lux) between 6:30 pm and 9:00 pm, with a 10-20 minute delay before going to bed every few days [28]. The available literature and the recommendations of the Polish Psychiatric Association consider this method to be completely safe and therefore suitable for use in all age groups and pregnant and breastfeeding women [28, 29].

Naps

Regular napping is recommended for sleep disorders with excessive sleepiness [30, 31]. Expert advice is to take short naps for about 20-30 minutes per day (depending on the disorder, one to three naps per day are recommended – the total time for all naps should not exceed 50-60 minutes) [30, 31]. These naps should be taken between 10 a.m. and 6 p.m. Studies [30, 31] show that naps do not interfere with the process of falling asleep at night; on the contrary, they help to regulate sleep. They have also been shown to have beneficial effects on cardiovascular disease, cognitive processes, and stress reduction. Naps also provide time to recover from sleep deprivation and improve mood [30, 31]. A study [32] of 400 people found that a short nap during the day lowered blood pressure

by an average of 5% and reduced feelings of fatigue. Its regular practice, especially in people with excessive sleepiness, allows them to maintain a satisfactory level of activity while meeting the body's need for sleep [30-32].

Pharmacological treatments for sleep disorders

The pharmacological treatment of sleep disorders depends on the cause and form of the disorder. Several classes of drugs with different mechanisms of action are used to treat insomnia [1, 33]. It is important to remember that pharmacological treatment is only initiated when causal treatment has failed or when causal treatment cannot be pursued because the specific causative agent of insomnia cannot be identified [33, 34].

An indication for initiating pharmacological treatment is insomnia that persists for several days and significantly interferes with the patient's 24-hour functioning [1, 33-35]. Pharmacological treatment should be used for as short a time as possible, up to a maximum of a few weeks, because it is associated with a high potential for addiction, possible drug interactions, and scientific evidence questioning the efficacy of chronic use of such treatment. The literature [33-35] suggests that pharmacotherapy is highly effective in the first few weeks of treatment for sleep disorders, but this effectiveness decreases with time. Current recommendations suggest that pharmacotherapy for sleep disorders should be as short as possible and used at the lowest effective dose [1, 33-35].

For sleep disorders with excessive sleepiness, medications are used to increase daytime activity and stabilise nocturnal sleep function [36]. Treatment is usually symptomatic, and selecting the appropriate drug and dose is a major therapeutic challenge [37].

Medications used to treat insomnia

- Melatonin – Under physiological conditions, melatonin is a hormone secreted by the pineal gland during the nocturnal (dark) hours, and its secretion is linked to receptors in the suprachiasmatic nucleus of the hypothalamus [37, 38]. The main functions of melatonin are to regulate the master biological clock and to regulate the diurnal cycle [1, 37]. Biologically, it is a derivative of tryptophan. The biological half-life of endogenous melatonin is about 50-60 minutes [38]. The biological half-life of exogenous melatonin varies from a few minutes to 8 hours depending on the drug sold in pharmacies [37, 38]. It has been suggested that sleep disorders may be associated with abnormal melatonin levels. However, studies to date have not provided clear answers about its efficacy and safety [37, 38]. Experimental studies have used different doses of melatonin, ranging from 0.1 mg to 80 mg. The best effects were seen in a narrow dose range, between 5 and 15 mg [37, 38]. Melatonin given in the evening has been shown to prevent the onset of delayed sleep phase, reduce the number of night wakes, and improve sleep quality. On the other hand, several trials have failed to show a significant effect of melatonin supplementation on the occurrence of insomnia, and its use has been considered unwarranted [37, 38]. Instead, melatonin used during the day or in excessive doses adversely affects psychomotor function, impairs cognitive performance, and increases the risk of sleep apnoea and vasoconstriction [37, 38]. Recent scientific reports suggest that melatonin can be used as a mild sleep aid. Initially, a dose of 5 mg of melatonin was recommended, but it is now suggested that 10 mg of melatonin should be taken approximately one hour before bedtime [37, 38].
- Valerian (valerian extract) – This is one of the most commonly used over-the-counter treatments for insomnia [39]. Valerian extract contains many active compounds in its composition, including sesquiterpenes and valepotriates [39, 40]. The mechanism of action of valerian is not fully understood, but it has been suggested that the sedative, sleep-inducing, and mild anti-anxiety effects are related to its affinity for serotonin and adenosine receptors [39, 40]. The efficacy of this extract has been demonstrated in mild to moderate sleep disorders. A clinical trial compared the efficacy of valerian extract and oxazepam in a group of 202 adults with insomnia. A 6-week follow-up showed that both agents had similar efficacy, with patients in both groups reporting improved sleep quality, increased sleep duration, and a reduction in nighttime awakenings [39, 40].
- Antihistamines – Although the main purpose of antihistamines is to relieve allergic symptoms, in some cases they are used for insomnia. These drugs have a soporific effect by blocking histamine receptors [33, 41]. The most commonly used drugs in this group are hydroxyzine, diphenhydramine, and doxylamine [41]. This is considered a safe group of drugs and can be used successfully for insomnia. It is recommended that the use of this group of drugs should be relatively short because of the rapid development of tolerance to the sedative effect and the potential for anticholinergic effects (constipation, cognitive decline, reduced psychomotor performance, slowing) [1, 33, 41]. Because of the potential anticholinergic effects, these drugs are rarely used in geriatric patients. The literature reports equivocal evidence for the use of hydroxyzine. A number of studies have reported no improvement in sleep quality or prolongation of sleep time after its use but have shown sedative effects and decreased psychomotor performance

in patients [1, 33, 41]. In the oldest age group, an increased likelihood of delirium tremens has been demonstrated after use of this class of drugs.

- Antidepressants – These are a diverse group of drugs with different mechanisms of action [33]. Some agents used to treat depressive episodes have a side effect of somnolence, which is used to treat insomnia [42]. Mianserin, trazodone, and mirtazapine, among others, are used in this group of patients [1]. These drugs are considered to be safe and well tolerated by patients. Their advantages include a lack of addictive potential and high efficacy [33, 43]. Of these, mianserin has the greatest sedative effect and improves sleep quality by prolonging and deepening sleep. It is considered safe, but in some cases it causes increased daytime sleepiness, difficulty waking in the morning, and impaired functioning [1, 33]. It is not advisable to drive or operate machinery after use [43]. However, the use of mirtazapine and trazodone is of particular concern [44]. Clinical trials have shown high efficacy of mirtazapine in insomnia-type sleep disorders. It has been shown to normalise sleep records, improve sleep quality, and prolong sleep duration. Despite its benefits, the experience of very realistic dreams and the potential risk of increased tumour necrosis factor levels have been noted, which may limit its use [44]. Another drug is trazodone, which belongs to the group of serotonin 5-HT2 receptor antagonists and serotonin reuptake inhibitors. It reduces psychomotor inhibition, stabilises mood, and restores physiological sleep patterns. It has been used successfully to treat insomnia in different age groups [1, 43, 44].
- Antipsychotics (neuroleptics) are a group of drugs used to treat psychiatric disorders and illnesses, particularly those with delusional and hallucinatory symptoms [1, 44]. They are a diverse group of substances with different safety and side-effect profiles. The first generation of these drugs have a range of side effects including sedation, parkinsonism, dry mouth, sexual dysfunction, significant psychomotor retardation, and the potentially fatal neuroleptic malignant syndrome [45]. Atypical neuroleptics are considered to be a safer group of drugs, but they still carry some risks of use [33]. Because of their mechanism of action, they are sometimes used to treat insomnia (especially atypical neuroleptics such as quetiapine) [1, 45]. Among the neuroleptics, clozapine, levomepromazine, and chlorpromazine have the greatest sedative potential; haloperidol, thioridazine and olanzapine have somewhat less; fluphenazine, trifluoperazine, and thiothixene have little; and quetiapine, ziprasidone, and pimozide have very little. No sedative effect has been observed with sulpiride, amisulpride, risperidone, and flupentixol [45].
- Benzodiazepines – Until recently these were the main class of drugs used to treat insomnia [1, 33]. This class of drugs includes a wide variety of substances of varying clinical relevance, and therefore not all are used in the treatment of insomnia [46]. Those that are used are characterised by different durations of action, accumulation in the body, and the occurrence of active metabolites. Benzodiazepines are classified as short-acting, intermediate-acting, or long-acting [46, 47]. The choice of appropriate drug therefore depends on the disorder observed – difficulty falling asleep, night waking, early awakening. Limited use is recommended because of the high risk of developing tolerance to the drug, high addictive potential, adverse effects on cognitive function, increased risk of developing disorders of consciousness and dizziness, psychomotor disturbances, and increased daytime sleepiness [46, 47]. Benzodiazepines bind to the benzodiazepine receptor, which is part of a larger receptor complex called the GABAergic receptor [46]. They have anxiolytic, sleep-inducing, sedative, anticonvulsant, myorelaxant, and amnestic effects. Among this group of drugs, flunitrazepam, nitrazepam, and estazepam have the greatest sedative and sleep effects [47]. Benzodiazepines have been shown to shorten the time from bed to sleep, maintain sleep continuity, and improve lucidity [46]. Despite their high efficacy, their chronic use is not recommended. Continuation beyond 30 days significantly increases the risk of dependence (especially in those with a history of dependence) [46]. Current recommendations do not recommend the use of this class of drugs in the elderly or in children and adolescents [47].
- Non-benzodiazepine GABA receptor agonists – These are a group of sleep-inducing drugs that includes zopiclone, zolpidem, and zaleplon [48, 49]. They are safer than benzodiazepines, although they also have the ability to develop tolerance and dependence. They act quickly (peak concentration and half-life are usually about one hour), making it easier to fall asleep and improving sleep quality [50, 51]. In addition, there is no increased sleepiness the next day. According to recommendations, the duration of use of this group of drugs should not exceed 4 weeks. They can be used in adolescents aged 15 years and older [51].

Medications for excessive sleepiness

Medications that stimulate the central nervous system and promote wakefulness are used to treat excessive sleepiness [52]. These drugs prolong wakefulness and prevent excessive sleepiness [53]. They are mainly used in severe forms of these disorders, such as narcolepsy or cataplexy [52].

Pharmacological treatments:

- Methylphenidate – This is a dopamine reuptake inhibitor and norepinephrine; the mechanism of action is to increase the concentration of extracellular dopamine and increase dopaminergic neurotransmission. It stimulates the central nervous system [53].
- Modafinil – This is a psychostimulant. Depending on the dose used, this drug restores or improves wakefulness during the day. Clinical trials showed a statistically significant improvement in sleep quality, but the improvement was small. There is also evidence of an increased risk of vascular events with modafinil [54].
- Dextroamphetamine – This is a substance that belongs to the group of sympathomimetics, which are drugs that stimulate the central nervous system. It increases mental and physical performance, eliminates fatigue, and improves concentration and alertness. Side effects include a high risk of cardiovascular events [55].
- Selegiline – This is a selective and irreversible inhibitor of monoamine oxidase B, which increases the concentration of dopamine in the central nervous system. It is a drug that increases wakefulness and delays sleep. While taking the drug, psychophysical performance may be impaired, making it impossible to drive or operate machinery [56]. Antidepressants such as clomipramine, imipramine, fluoxetine, amitriptyline, and venlafaxine are used for severe sleep attacks such as cataplexy [57]. Sodium γ-hydroxybutyrate is used to treat severe forms of narcolepsy.
- Sodium γ-hydroxybutyrate – This has an inhibitory effect on the central nervous system, leading to changes in brain activity that promote the occurrence of slow-wave sleep and stabilise night sleep (prolonging the time of deep sleep, improving sleep quality), while limiting the number of daytime sleep attacks [58]. This drug must be used under strict medical supervision because its side effects include psychosis, respiratory depression, convulsions, and suicide attempts. Use of the drug promotes the development of tolerance and dependence [58].

CONCLUSIONS

Sleep disorders are a significant medical problem. In recent years, there has been a dynamic increase in the number of patients reporting difficulty falling asleep, frequent awakenings, and unsatisfactory sleep quality. Sleep disorders can be associated with other diseases – most commonly mental, neurological, respiratory, and cardiovascular diseases – and can be an idiopathic diagnosis. According to the recommendations, the treatment of sleep disorders should be based on non-pharmacological methods and, in the case of severe sleep disorders, on regular pharmacotherapy.

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