Cognitive Behavioral Therapy in the Treatment of Sleep Disorders: Theoretical Foundations, Research Methods and Analysis of Effectiveness

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ABSTRACT
Sleep disorders are not just a disruption of a person's normal recovery process and a deterioration in life quality. It has been repeatedly demonstrated that insomnia is an independent factor that worsens the course of somatic diseases and leads to psycho-emotional disorders of varying severity. Research into cognitive behavioural therapy for insomnia aims to provide answers to these questions. The most effective non-pharmacological treatments for insomnia are behavioural and psychotherapeutic methods that improve sleep and do not cause side effects or addiction. The chosen research topic is also relevant in the context of the increasing prevalence of insomnia due to the profound shocks of the Russian-Ukrainian war among internally displaced persons, various other stresses and interpersonal conflicts. All these and many other factors can cause acute insomnia. Patients with insomnia often have increased emotional reactivity, which can also lead to disorders. The findings of the research help understand the psychological factors involved in the processes of researching cognitive behavioural therapy for sleep disorders and can be used by practitioners who are faced with the need to treat patients with insomnia; it will help to understand traumatic experiences and emotional needs better. In conclusion, cognitive behavioural therapy is a practical, non-pharmacological approach to the treatment of sleep disorders, including insomnia. The study highlights the importance of addressing psychological factors, such as emotional reactivity and traumatic experiences, which are often associated with insomnia. As well as providing valuable information for practitioners, this study highlights the importance of individualised therapeutic interventions, particularly in high-stress environments such as those resulting from war and displacement. cuments in various Scopus indexed journals was examined bibliometrically, for the years 2014-2024.

Introduction

Sleep is a complex psychophysiological state that directly determines a person's mental and biological activity. This definition is well known, and sleep is an essential human need. But despite this, in recent times, sleep disorders are becoming more and more widespread. And unfortunately, the upward trend of somnological problems continues. Sleep disorders are not only a violation of the normal process of human rest but also a deterioration of the quality of life. It has been repeatedly demonstrated that insomnia is an independent factor worsening the course of somatic diseases, leading to disorders of varying degrees of severity. Moreover, disruption of the normal sleep process hampers the natural metabolism of the human brain, leads to the accumulation of pathological protein and, as a result, to the development of neurodegenerative diseases such as Alzheimer's and Parkinson's disease. The medical community recognises the significance of sleep disorders, which has led to the creation of a separate International Classification of Sleep Disorders (ICSD), revised several times. The most common disorders in the population and clinically significant, according to the ICDS, are insomnia and sleep breathing disorders. ICDS insomnia is defined as a syndrome characterised by recurrent disturbances in the initiation, duration, consolidation or quality of sleep, despite sufficient conditions and time for sleep, and manifested by various disturbances in daytime activities. It is a syndrome of several diseases or an independent disease comorbid with somatic and neurological pathology and undoubtedly worsens and aggravates its course. This issue has been extensively researched by numerous contemporary scholars, includingSella, E., Miola, L., Toffalini, E., & Borella, E. (2021), Morin C.M, Jarrin D.C. (2022), Riemann, D., Espie, C. A., Altena, E., Arnardottir, E. S., Baglioni, C., A. Bassetti, C. L., Bastien, C., Berzina, N., Bjorvatn, B., Dikeos, D., Groselj, L. D., Ellis, J. G., Garcia-Borreguero, D., Geoffroy, P. A., Gjerstad, M., Gonçalves, M., Hertenstein, E., Hoedlmoser, K., Hion, T., et al (2023). , Xu, M., Li, B., Wang, S., Chen, C., Liu, Z., Ji, Y., Liu, K., & Niu, Y. (2024), Zhou F, Li S, Xu H. (2022), Mao X, Zhang F, Wei C, Li Z, Huang C, Sun Z, et al.(2023), each contributing valuable insights into treatment efficacy and mechanisms of change. A considerable body of work has addressed sleep disorders and their treatment through cognitive-behavioural therapy, with significant contributions from researchers such as Bentham, C., & Eaves, L. (2021), Sella, E., Toffalini, E., Canini, L., & Borella, E. (2022), Thondala, B., Pawar, H., Chauhan, G., & Panjwani, U. (2023), Lannon-Boran, C., Hannigan, C., Power, J. M., Lambert, J., & Kelly, M. (2023), El Basiouny, E.D D, Habib HI. (2023), Wei, J., Xu, Y. & Mao, H. (2024).

The research topic is highly relevant against the backdrop of the growing prevalence of due to the profound shocks of the Russian-Ukrainian war among internally displaced persons, various other stresses, and interpersonal conflicts. War is a permanent emergency that affects the entire network of relations in society.This traumatic event affects not individuals but the population as a whole, i.e. it generates a 'collective trauma' that affects everyone, not just those directly affected by hostilities. War simultaneously creates stress in many areas, destroying the population's physical, social, and mental well-being. The problems of researching cognitive behavioural therapy for sleep disorders are very relevant given that insomnia symptoms are reported in approximately 33-50% of the adult population. The term 'insomnia' is currently used in different contexts to refer to certain symptoms or specific disorders. These disorders can manifest themselves in a variety of particular complaints and other interrelated problems, which require additional time to assess patients and organise care for chronic insomnia. Insomniac disorders aggravate the course of many

psychosomatic and neuropsychiatric disorders and lead to the development of borderline pathology. Sleep disturbance is often the main reason for seeking medical help. Insomnia reduces tolerance to stressful situations and immunity, contributes to the development of psychiatric (depression, psychosis, etc.) and cardiovascular diseases, and accelerates the ageing process. Among the consequences of insomnia are social and medical. The first is essential, primarily because of daytime sleepiness, which develops because sleep does not fulfil a vital function. This applies mainly to driving vehicles while drowsy. The medical consequences of insomnia are actively studied at present, both by domestic and foreign scientists. However, the lack of work on initial somnological manifestations prevents the development of clinical criteria for early diagnosis and prevention of these disorders.

After all, insomnia often causes both individual and social issues for patients. In modern medicine, the concept of sleep results from a lack of differentiation of the received afferent impulses to the brain and functional activation of neurons in a particular area of the brain. The most effective method of insomnia treatment is cognitive behavioural therapy, which is used in combination with pharmacological therapy.“Insomnia is the second most common mental disorder”(2019). “Some of the well-known consequences of sleep difficulties or disorders, such as insomnia, are impaired daytime functioning and cognition, decreased workplace productivity, and injuries and accidents” (O’Regan D., Garcia-Borreguero D., Gloggner F., Wild I., Leontiou C, & Ferini-Strambi L.,2023). A large proportion of individuals with chronic pain experience insomnia-related symptoms, which can be persistent and negatively impact one’s life quality.(Zambelli, Z., Halstead, E.J. Fidalgo, A.R., Mangar, S. and Dimitriou D., 2024). Therefore, because of the above, the choice of the research topic is due to the high rate of growth of insomnia in the population.

In this regard, cognitive behavioural therapy for sleep disorders (insomnia) was chosen as the ***research object.*** The research focuses on mental models of insomnia, stages in the treatment of sleep disorders and measures to identify possible causes of sleep disorders, a system of diagnostic procedures, development of a group training programme for cognitive behavioural therapy for sleep disorders, determination of the optimal tools for assessing sleep disorders, their expression and characteristics.

The studyaims to identify and analyse the state of development of insomnia diagnostics, the available questionnaires for insomnia diagnostics, the optimal tools for assessing disorders, and the optimal tools to evaluate sleep disorders, as well as their expression and characteristics.

The chosen goal led to the following ***research objectives***:

- to identify the state of development of the problem of cognitive behavioural therapy for insomnia;
- identify maladaptive behaviour and cognitive schemes that contribute to the chronicity of insomnia;
- to identify specific behavioural approaches that reduce general psychophysiological overexcitement and anxiety resulting from lack of sleep;
- to identify the peculiarities of the relationship between personal factors of chronic insomnia;
- to study the psychological conditions and dynamics of chronic insomnia as well as the ways and possibilities of their regulation using modern psychocorrections.

Methods and Materials

In the course of the study, the following methods were used to solve the problems and test the hypothesis: theoretical analysis of the situation, generalisation of scientific literature in the field of research, systematisation of scientific literature sources, comparative study of data and their summary; empirical methods: questionnaires, tests, individual interviews including questionnaires, constant and formative experiments.

The psychodiagnostic study and quality of life assessment were conducted using appropriate psychometric scales.

Insomnia assessment using the Athens Insomnia Scale is widely used. A person's sleep pattern is assessed using eight different sleep-related parameters.

The anamnestic clinical and psychopathological methods were used by generally accepted approaches to the primary psychiatric examination, which was carried out using the appropriate psychometric Morin scale (assessment of insomnia severity and sleep quality). The subjects' insomnia severity was assessed using the Insomnia Severity Index (ISI), which CH developed and validated. Morin (test sensitivity – 86.1%, specificity – 87.7%) and allowed to assess the nature and severity of insomnia. The test consists of 7 questions assessing insomnia's nature, severity and consequences. The duration of the recall period was the last month's information with an assessment of the following parameters: difficulty falling asleep and maintaining sleep and problems with early morning waking; dissatisfaction with sleep; sleep disturbances and problems with early waking; problematic sleep, noticeability of sleep problems by others; distress caused by sleep disorders. A 5-point Likert scale was used to assess each item (from 0 – no problem to 4 – severe problem) with a total score of 0 to 28 and the following interpretation: no insomnia (0–7); subthreshold insomnia (8–14); moderate insomnia (15–21); severe insomnia (22–28).

The Epworth Daytime Sleepiness Scale (ESS) has been proven effective in diagnosing obstructive sleep apnoea (OSA) and detecting narcolepsy and idiomatic sleepiness. This technique allows you to determine daytime sleepiness in points. It is known that daytime sleepiness is a direct consequence of disrupting the typical structure of nighttime sleep. Drowsiness is very individual, so some people perceive daytime sleepiness as constant weakness and sudden fatigue during the day.

Daytime sleepiness usually occurs during rest, after eating, reading or watching TV, i.e. when patients are relaxed. Excessive drowsiness increases the risk of an accident due to sudden falls asleep while talking, walking or driving. With such excessive daytime sleepiness, persistent drowsiness and a general drop in energy persist even after a good night's sleep.

The procedure takes from 2 to 5 minutes, during which the subject assesses their likelihood of falling asleep in different life situations using a 3-point system, where 0 – never fall asleep, 1 – there is a slight chance of falling asleep, 2 – moderate, 3 – always fall asleep.

The patient should fill in the questionnaire version that does not indicate the number of points they receive for each answer. Answers are scored as follows: 0-5 points – normal, 6–9 points – insomnia, 9–16 points – obstructive sleep apnoea syndrome, 16–24 points – narcolepsy.

The Pittsburgh Sleep Quality Inventory (PSQI) is a self-administered questionnaire assessing sleep quality and disturbances over one month. The PSQI can be used for initial assessment and ongoing comparative measurements of sleep quality in adults in all healthcare settings. The PSQI has a diagnostic sensitivity of 89.6% and a specificity of 86.5% ($k=0.75$, $p<0.001$).

The questionnaire's nineteen items generate seven 'components' of scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medication use, and daytime functioning. The sum of the scores for these seven components provides one global score.

Responses are calculated based on the Likers Scale with a range of values for questions 5 to 10 from 0 to 3, where '3' reflects the highest degree of violation of a particular element. It is not allowed to leave questions 1 to 9 unanswered. If the answer is given in the form of a range (for example, in question 2, the answer is 30-60 minutes to fall asleep), an average should be entered (in this case, 45 minutes).

The first component of subjective sleep quality ('How would you rate your sleep quality over the past month') is scored from 0 to 3 in question 6.

The second component of sleep latency (questions two and 5a) is scored as follows: for question 2, 0 to 15 minutes is scored 0 points; in the range of 15 to 30 minutes, 1 point is scored; in the range of 30 to 60 minutes, 2 points are scored; and over 60 minutes is scored 3 points. For question 5a, if the sum is the same, 0 = 0 points; 1–2 = 1 point; 3–4 = 2 points; 5–6 = 3 points.

To assess the third component of sleep duration (question 4), if the sleep duration is >7 hours, the score is 0 points. If it is between 7 and 6 hours, the score is 1 point; between 5 and 6 hours, the score is 2 points; and less than 5 hours, the score is 3 points. It can also be compared with the usual sleep duration, in which case 85% of the usual sleep duration = 0 points, 75%–84% = 1 point, 65%–74% = 2 points, and less than 65% = 3 points.

The fourth component of habitual sleep efficiency is calculated using the formula (number of hours of insomnia) / (number of hours spent in bed) x 100. A score of 85% equals 0 points; 75–84% = 1 point; 65% – 74% = 2 points; less than 65% = 3 points.

When assessing the fifth component of sleep disturbances (question 5), the choice 'never in the last month' from the letter 'b' to the end of the question scored 0 points. The total weight of sleep disturbances in individual items starting with the letter 'b' in the interval 1–9 is estimated at 1 point; in the interval 10–18 – 2 points, over 18 is estimated at 3 points.

The sixth component, sleeping medication use, is scored from 0 to 3 on question 7. The last component, the seventh component of impairment of daytime functioning, reflects the total score of questions 8 and 9. The absence of impairment corresponds to a score of 0; a total score of 1–2 is estimated at 1 point, 3–4 – 2 points, 5–6 – 3 points. The total score on the questionnaire combines all seven components, where the minimum score is 0 (best sleep quality) and the maximum score is 21 (worst sleep quality). A total score of < 5 is associated with good sleep quality. A total score of 5 or more indicates significant sleep disturbance.

The Pittsburgh Sleep Quality Index (PSQI) can assess sleep quality over the previous month. The PSQI is not a diagnostic scale, so it was decided not to be used. The Insomnia Severity Index (ISI) was developed to measure the severity of insomnia and is reliable and sensitive enough to identify insomnia in patients.

Resultsand Discussion

In order to solve the set tasks and achieve the aim of the present study, we analysed the results of examination and treatment of patients with anxiety-depressive disorders associated with sleep disorders, mainly at the Regional Centre for Psychotherapeutic Rehabilitation and Psychoprophylaxis of Internally Displaced Persons in Kyiv. A number of health problems, including insomnia, arise as a result of war-related trauma. Psychological

stress during war is a complex and intense condition that many people can experience in situations of conflict, violence and threats to their lives and well-being. This stress can profoundly impact people's psychological and emotional well-being, causing various reactions and symptoms.

The participants were required to complete the test methods: Insomnia Severity Index (ISI), Epworth Sleepiness Scale (ESS), Athens Insomnia Scale (AIS), and Epworth Sleepiness Scale (ESS).

The total sample consisted of 629 patients aged 18 to 65 years. The inclusion criteria for the study were the presence of anxiety-depressive disorders of neurotic or organic genesis with sleep disturbances at the time of the examination,the absence of concomitant chronic somatic diseases in the stage of decompensation, the possibility of psychopathological examination and follow-up of patients for at least 3 months from the start of treatment; and the provision of informed written consent to participate in the study.

Inclusion criteria: anxiety and depressive disorders of neurotic or organic origin without sleep disorders; presence of a psychotic episode, suicide attempt, chronic somatic diseases in the stage of decompensation at the time of the examination or in the past, confirmed by a relevant expert opinion; severe organic brain damage (severe traumatic brain injury, acute cerebrovascular accident, brain cancer, intoxication, etc.) at the time of the examination; substance abuse.

Regarding gender, the vast majority of respondents were women (83.3%), with the remainder being men (16.7%). This trend was observed in all study groups: no statistically significant differences in patients by gender were found *(p=0.923*).

The marital status of the study population was dominated by married patients (68.3%). The lowest number was observed in group 3 (56.7%) and the highest in group 4 (83.3%). There were no statistically significant differences in marital status between the groups (p=0.166).

There were also no statistically significant differences between the groups in terms of educational level (*p=0.655*, the majority of respondents (88.3%) had higher education) and place of residence (*p=0.551*, the vast majority (95.0%) were urban residents). The vast majority of subjects (almost one in five) had a first episode of the disease (81.7%), and (18.3%) had a repeat episode. There were no statistically significant differences between the groups in the type of episode (*p=0.197*).

The age of the patients included in the study ranged from 18 to 54 years and averaged 34.0 years (32.0; 44.0) – Me (25%; 75%), respectively. At the same time, the mean age in the subsample of patients with anxiety-depressive disorders of neurotic genesis was 33.0 (29.0; 46.0) years in group 1 and 36.5 (28.0; 45.0) years in group 2.

There were no statistically significant differences between the groups (*p=0.894*). The mean age of patients with anxiety-depressive disorders of organic origin was 52.5 (40.0; 59.0) years in group 3 and 53.0 (43.0; 57.0) years in group 4. There were no statistically significant differences between the groups (*p=0.756*).

Thus, the patients in the study groups did not differ statistically significantly (p>0.05) in terms of gender, age, marital status, education level, place of residence and the nature of the disease episode, which confirmed their homogeneity in terms of general characteristics and allowed for correct comparison by other parameters.

Athens Insomnia Scale

In the study's first phase, IDPs were surveyed using the Athens Insomnia Scale. Out of 629 people, 64 agreed to take part in the online survey using this insomnia scale, which

allowed us to assume that the category of IDPs had sleep disorders. The participants were divided into two groups: the first group (32 people) expressed a desire to undergo a course of cognitive behavioural therapy (7–8 weeks), and the second group (32 people) were not ready for a long training course. The latter were given general advice on sleep hygiene and keeping a sleep diary. During Stage 1 training, two subgroups were provided with psychoeducation on sleep physiology, sleep patterns, the effectiveness of cognitive behavioural therapy for sleep disorders, and keeping a sleep diary. Studies show that keeping a sleep diary and following sleep hygiene recommendations alone are insufficient to reduce insomnia symptoms significantly. We expect that participants in the group that completed 7–8 weeks of cognitive behavioural therapy will show better results. Stage 3 – meeting once a week (7–8 weeks) online with participants who have expressed a desire to receive cognitive behavioural therapy.In the final stage, 64 people took part, summarised the results and went through the methods to get the results after the study. The training *Sleep Disorders: the Effectiveness of Cognitive Behavioural Therapy* was held.

Ch. Morin Insomnia Severity Scale

Sleep disturbances in both groups were assessed by determining the insomnia severity index. The study was conducted in patients with anxiety-depressive disorders of neurotic origin with sleep disturbances (Group 1) and in patients with anxiety-depressive disorders of organic origin with sleep disturbances (Group 2).

Sleep disturbance in both groups was assessed by determining the Insomnia Severity Index according to Ch. Morin. The study was conducted in patients with anxiety-depressive disorders of neurotic genesis with sleep disturbance (group 1) and in patients with anxiety-depressive disorders of organic genesis with sleep disturbance (group 2). The results of the analysis of sleep disorders are presented in Table 1.

Indicators	Group 1	Group 2	
Difficulty Falling Asleep	3.0 3.0 / 3.0	3.0 3.0 / 3.0	(.138
Frequent and/or Prolonged Awakenings	3.0 2.0 / 3.0	3.0 2.5 / 3.0	(.534
Early Morning Awakening	2.0 2.0 / 3.0	3.0 2.5 / 3.0	< 0.001
Satisfaction with Sleep	2.7 2.5 / 3.0	3.0 3.0 / 3.0	< 0.001
Decreased Productivity due to Poor Sleep	3.0 2.0 / 3.0	3.0 2.0 / 3.0	(.309
Reduced Quality of Life due to Poor Sleep	2.0 2.0 / 3.0	3.0 2.0 / 3.0	(.001
Concern about Poor Sleep	2.0 2.0 / 3.0	3.0 3.0 / 3.0	< 0.001
Insomnia Severity	18.0 16.0 / 20.0	20.0 18.0 / 21.0	< 0.001

Analysis of Sleep Disorders Table 1.

- Note: In each group's 'Value Me / Q25 / Q75' columns, the values represent the median (Me) and interquartile range (Q25/Q75), respectively.

According to the results obtained, there were no statistically significant differences between the groups regarding falling asleep, frequent and/or prolonged awakenings and reduced activity due to problematic sleep; these indicators generally corresponded to a high severity level. At the same time, in the group of patients with anxiety-depressive disorders of organic genesis G2, the index of early morning awakening (3.0 (2.5; 3.0) points) was significantly (p<0,001) higher and corresponded to a high level of severity compared to the group of patients with neurotic profile disorders G1 (2.0 (2.0; 3.0) points), in which this parameter corresponded to the average level.

The data show that in G2, the indicators of satisfaction with sleep (3.0 (3.0; 3.0) points) and concern about problematic ostomy (3.0 (3.0; 3.0) points) were statistically significantly (p<0,001) higher than in G1, where these parameters were 2.7 (2.5; 3.0) points and 2.0 (2.0; 3.0) points, respectively. At the same time, these indicators corresponded to a high severity level in G2 and were within the average level in G1.

The indicator of reduced quality of life due to insufficient sleep was rated as average in G1 (2.0 (2.0; 3.0) points) and very pronounced in G2 (3.0 (3.0; 3.0) points), and the differences between the groups were statistically significant (p<0,05).

Generally, both groups' overall insomnia severity corresponded to the average severity. However, this indicator was significantly (p<0.001) higher in the group of patients with anxiety-depressive disorders of organic origin (20.0 (18.0; 21.0) points) than in the group of patients with neurotic disorders (8.0 (16.0; 20.0) points). In addition, the scores for early morning awakening and fear of poor sleep were statistically significantly (p<0.001) higher in G2. In the group of patients with anxiety-depressive disorder of organic origin, we have considerations about the conditionality of these differences due to the duration of the disease and the presence of concomitant organic pathology.

The main characteristics of anxiety, depression and asthenic state according to the genesis of the disease and the results of the severity of anxiety and its components in both groups of the study are shown in Table 2.

Indicators	Group 1	Group 2	I
Situational Anxiety (IAT, SA-S)	8.0 8.0 / 9.0	9.0 8.0 / 9.0	(.014
Emotional Discomfort (ED)	8.0 8.0 / 9.0	8.0 7.5 / 8.0	< 0.001
Asthenic Component of Anxiety (AC)	8.0 8.0 / 9.0	9.0 8.0 / 9.0	(.052
Phobic Component of Anxiety	7.0 7.0 / 9.0	8.0 7.0 / 9.0	(.001
Anxious Assessment of Prospects (AP)	8.0 7.0 / 9.0	8.0 7.0 / 8.0	(.713
Social Defense Reactions (SD)	6.0 4.0 / 6.0	6.0 4.0 / 8.0	(.220
Personal Anxiety (IAT, SA-P)	5.0 5.0 / 6.0	7.0 5.5 / 7.0	< 0.001
Asthenic Component of Anxiety (AC)	7.0 6.0 / 7.0	7.5 7.0 / 8.0	< 0.001

Phobic Component of Anxiety (PC)	4.0 1.0 / 6.0	7.0 7.0 / 7.0	 0.001
Anxious Assessment of Prospects (AP)	6.0 4.0 / 6.0	5.0 5.0 / 6.0	(.698
Social Defense Reactions (SD)	2.0 1.0 / 4.0	4.0 4.0 / 4.0	 0.001

Results of Assessment by Integrative Anxiety Test (in Sten Scores). Table 2

- Note: In each group's 'Value Me / Q25 / Q75' columns, the values represent the median (Me) and interquartile range (Q25/Q75), respectively.

According to our results, the overall indicator of situational anxiety was generally rated as high in both groups. At the same time, it was significantly (*p=0.014*) higher in G2 than in G1 and amounted to 9.0 (8.0; 9.0) stanines, while in G1, this indicator corresponded to the value of 8.0 (8.0; 9.0) stanines.

The analysis of individual components of situational anxiety showed that emotional discomfort was statistically significantly (p<0,001) higher in the group of patients with neurotic disorders (8.0 (8.0; 9.0) states) than in the group of patients with anxiety-depressive disorders of organic origin (8.0 (7.5; 8.0) states), and in both groups, this indicator corresponded to a high level.

It should be noted that in the group of patients with anxiety-depressive disorders of organic origin, the phobic component was significantly (*p=0.001*) higher than in the group of patients with neurotic profile disorders, amounting to 8.0 (7.0; 9.0) and 7.0 (7.0; 9.0) states, respectively. In both the first and second groups of the study, the phobic component of Situational Anxiety was relatively high in severity. The asthenic component in G2 (9.0 (8.0; 9.0) states) was higher compared to the corresponding parameter in G1 (8.0 (8.0; 9.0) states) and was rated as high, and these differences between the groups tended to be statistically significant (*p=0.052*).

Thus, the anxiety component of the rating was high in G1 and G2, and the social defences corresponded to the average severity level and were comparable in absolute value in both study groups.

The analysis of personality anxiety showed that this indicator was significantly (p<0,001) higher in the group of patients with anxiety-depressive disorders of organic origin (7.0 (5.0; 7,)) stanines) Then, in the group of patients with neurotic profile disorders ((5.0 (5.0, 6.0)) and stanines), they were rated as average in both groups.

However, in the group of patients with organic profile disorders, the asthenic and phobic components of personality anxiety, as well as the element of social defence reactions, were significantly (p<0,001) higher. For example, the asthenic component of G1 was lower (7.0 (6.0; 7.0) stanines) compared to G2, where it was 7.5 (7.0; 8.0) stanines, corresponding to a high level of severity.

In the group of patients with anxiety-depressive disorders of organic origin, the phobic component corresponded to a value of 7.0 (7.0; 7.0) states and was rated as medium, whereas in the group of patients with neurotic profile disorders, this indicator was lower and amounted to 4.0 (1.0; 6.0) states, corresponding to a low level of severity.

The values of the indicator of social defence reactions were lower in G1 (2.0 (1.0; 4.0) standard deviation) than in – 4.0 (4.0; 4.0) standard deviation) and are low for both groups.

Thus, the components of anxious perspective-taking and emotional discomfort of personal continuity were comparable in absolute value in both groups, and no significant

differences were found. In the group of patients with anxiety-depressive disorders of organic origin, a higher level of severity of situational anxiety and personality anxiety was observed. All differences were significant. However, it should be noted that in this group of subjects, asthenic and phobic components predominated in both the structure of situational anxiety and the structure of personal anxiety.

The integrated indicator of the life quality was significantly ($p<0.005$) worse in G2 than in G1 (3.0 (2.7; 3.65)), according to the subjects. The subjects' self-assessment showed that the indicators of social role fulfilment and external life circumstances were statistically significantly ($p<0.001$) worse in the group of patients with organic genesis disorders than in the group with neurotic disorders. In addition, both groups' fulfilment of social roles and external life circumstances were low. According to the correlation analysis, a relationship was found between the severity of the situational and personal anxiety components and the severity of insomnia. (Table 3.)

Indicator	Difficulty Falling Asleep	Frequent and/or Prolonged Awakenings	Early Morning Awakening	Satisfaction with Sleep	Decreased Productivity Due to Poor Sleep	Reduced Quality of Life Due to Poor Sleep	Concern about Poor Sleep	Insomnia Severity
IAT ED	0.042	0.007	0.09	-0.053	0.202	-0.009	-0.212	-0.026
IAT AC	0.143	0.054	0.294	0.215	0.29	0.291	0.214	0.324
IAT PC	0.008	0.195	0.279	0.324	0.238	0.257	0.291	0.341
IAT AP	0.027	0.096	0.135	0.195	0.258	0.212	0.178	0.223
IAT SD	-0.037	0.083	0.253	0.27	0.173	0.179	0.20	0.225
IAT SA-S	0.135	0.134	0.323	0.329	0.349	0.413	0.343	0.433
IAT ED	-0.031	0.226	0.176	0.162	0.326	0.191	0.083	0.249
IAT AC	0.157	-0.045	0.384	0.401	0.232	0.300	0.359	0.381
IAT PC	0.174	0.139	0.406	0.434	0.208	0.339	0.512	0.459
IAT AP	0.061	0.213	0.119	0.284	0.277	0.254	0.154	0.262
IAT SD	0.229	0.135	0.274	0.356	0.247	0.331	0.463	0.42
IAT SA-P	0.209	0.159	0.359	0.450	0.390	0.411	0.437	0.497

Correlations between indicators of the severity of the components of situational and personal anxiety and indicators of insomnia severity (Spearman's rank correlation coefficients rs).
Table3

- Note: In this table:
  - **IAT ED**: Emotional Discomfort
  - **IAT AC**: Asthenic Component of Anxiety
  - **IAT PC**: Phobic Component of Anxiety
  - **IAT AP**: Anxious Assessment of Prospects
  - **IAT SD**: Social Defense Reactions
  - **IAT SA-S**: Situational Anxiety
  - **IAT SA-P**: Personal Anxiety

Our study results show that indicators of situational anxiety and personal anxiety correlate with insomnia severity – statistically significant relationships of moderate strength were found. As anxiety increases, insomnia severity rises and vice versa. It can be argued that sleep disturbances and pathological anxiety complicate each other and worsen the quality of life of the subjects; therefore, in the treatment of anxiety-depressive disorders of various genesis, it is essential to pay special attention to the correction of sleep disturbances. It has been shown that general sleep quality indicatorsstrongly correlate with the severity of insomnia: the Spearman rank correlation coefficient at the initial examination before therapeutic measures was $r_s = 0.75$ ($p < 0.001$). According to the correlation analysis, the severity of insomnia and the sleep quality index were associated with situational and personal anxiety according to the Integrative Anxiety Test, asthenia and most life quality indicators. In the latter case, the opposite was found: greater severity of insomnia and poorer sleep quality corresponded to lower quality of life indicators. Our correlation analysis also shows that quality of life, according to different assessments, is inversely correlated with anxiety, depression and asthenia, insomnia severity and sleep quality. This indicates the influence of these indicators on the decline in QoL. (Table 4).

Criteria	**Anxiety-Depressive Disorder of Neurotic Origin with Sleep Disturbances**	**Anxiety-Depressive Disorder of Organic Origin with Sleep Disturbances**
Clinical and Psychopathological Characteristics of Insomnia Syndrome		
General Features	Significant difficulty falling asleep; frequent night awakenings with poor resumption of sleep; presence of distressing, anxious thoughts; marked decrease in productivity due to inadequate sleep; significant disruption in daytime functioning	
Differences by Disorder		

Origin		
Early Awakening	Moderate disturbances related to early awakening	Pronounced early awakening with inability to resume sleep
Satisfaction with Sleep	Moderate satisfaction with sleep quality	Low satisfaction with sleep quality
Quality of Life Due to Poor Sleep (Self-Assessment)	Moderate reduction in quality of life	Low quality of life due to poor sleep
Sleep Duration	Moderate reduction in nighttime sleep duration	Significantly shortened nighttime sleep duration
Use of Sleep Medications	Rarely use sleep aids	Frequent use of sleep medications
Clinical and Psychopathological Characteristics of Anxiety Syndrome		
General Features	High levels of overall situational anxiety, moderate levels of social defence reactions, moderate anxiety regarding future situational anxiety, moderately expressed emotional discomfort, and future-oriented anxiety regarding personal anxiety.	
Differences by Disorder Origin		
Emotional Discomfort Component	Higher level of emotional discomfort in situational anxiety	Pronounced phobic component in situational anxiety
Asthenic Component of Personal Anxiety	The tendency toward high-level	Significantly higher in situational anxiety compared to neurotic-level disorders
Phobic Component of Personal Anxiety	Insignificant	Higher level of general personal anxiety
Phobic Component		Moderate expression

Severity		of phobic component
Social Defense Reactions Component		More pronounced in personal anxiety compared to neurotic-origin disorders
Clinical and Psychopathological Characteristics of Depressive Syndrome	Clinically significant level of depressive symptoms	
Clinical and Psychopathological Characteristics of Asthenic Syndrome	Moderate level of asthenic syndrome severity	High level of asthenic condition severity

Differential diagnostic criteria for anxiety-depressive disorders of different genesis with sleep disorders. Table 4.

Thus, the clinical and psychopathological characteristics of sleep disorders in anxiety-depressive disorders of neurotic and organic origin have been established. Given the established relationship between sleep disorders and pathological anxiety, we believe that determining the substantive nature of the anxiety syndrome allows a more differentiated and qualitative approach to the development of a treatment strategy.

Epworth Sleepiness Scale

The Epworth Daytime Sleepiness Scale (ESS) is effective in diagnosing obstructive sleep apnoea (OSA), narcolepsy and idiomatic sleepiness. This technique allows you to measure daytime sleepiness in points. It is well known that daytime sleepiness directly disrupts the standard structure of nighttime sleep. The concept of sleepiness itself is very individual, so some people subjectively experience daytime sleepiness as constant weakness and sudden tiredness during the day.

Daytime sleepiness usually occurs at rest, after eating, reading or watching television, i.e. when patients are in a relaxed state. Excessive sleepiness increases the risk of accidents due to sudden falls asleep while talking, walking or driving. Excessive daytime sleepiness, persistent sleepiness, and general energy loss persist even after a good night's sleep.

The procedure takes between 2 and 5 minutes, during which the subject rates his or her likelihood of falling asleep in different life situations using a 3-point system, where 0 - never falls asleep, 1 – there is a slight chance of falling asleep, 2 – moderate, 3 – always falls asleep.

The patient should complete the questionnaire version that does not indicate the number of points received for each answer. Answers are scored as follows: 0-5 points – normal, 6-9 points – insomnia, 9–16 points – obstructive sleep apnoea syndrome, 16–24 points – narcolepsy.

The Epworth Sleepiness Questionnaire was used to assess the severity of daytime sleepiness during treatment. The patient completed the questionnaire within three days before the start of cognitive behavioural therapy and then on days 2 to 15 after the start of treatment.

Respondents were asked to rate the possibility of falling asleep or even dozing off in different situations and to rate the likelihood in points (0 – never, 1 – low, 2 – moderate, 3 – high): Reading while sitting; Watching TV programmes; Passive participation in public events (sitting in a theatre, at a meeting); Travelling as a passenger in a car (if the journey lasts at least one hour); Resting lying down after lunch, if the situation allows it; Sitting or talking to someone; Sitting quietly after eating (without drinking alcohol); Driving a car that has stopped for a few minutes while driving.

The sum of the Epworth scores characterised sleepiness as mild (1–8 points), moderate (9–16 points) and severe (17–24 points).

There was a prolongation of falling asleep time, a short duration of night sleep, a deficit of slow-wave sleep in general and, above all, delta sleep, a prolongation of REM sleep latency, a decrease in the number of its episodes and their duration, which leads to a violation of sleep cycles. Prolonged periods of nighttime wakefulness and frequent nighttime awakenings contributed to a decrease in sleep efficiency. We did not analyseseparate cases of short-term (primarily unconscious) and long-term (more than 3 min) awakenings because they have a jointformation mechanism, and their duration was reflected in the night wakefulness.

The Epworth Sleepiness Questionnaire was used to assess the severity of daytime sleepiness. The patient completed the questionnaire within three days before the start of cognitive behavioural therapy and then on days 2–15 after.

It was suggested to assess the possibility of falling asleep or even falling asleep in different situations and to rate the likelihood of this in points (0 – never, 1 – low, 2 – moderate, 3 - high): Reading while sitting; Watching TV programmes; Passive participation in public events (sitting in a theatre, at a meeting); Travelling as a passenger in a car (if the journey lasts at least one hour); Resting lying down after lunch, if the situation allows it; Sitting or talking to someone; Sitting quietly after eating (without drinking alcohol); Driving a car that has stopped for a few minutes while driving.

The sum of the Epworth scores characterised sleepiness as mild (1–8 points), moderate (9–16 points) and severe (17–24 points).

In both observation groups, the subjective sleep assessment questionnaire scores were low, corresponding to the degree of insomnia, and no significant differences were found between the groups.

There was a prolongation of the time it takes to fall asleep, a short duration of night sleep, a deficit of slow-wave sleep in general and of delta sleep in particular, a prolongation of the latency of REM sleep, a decrease in the number of its episodes and their duration, leading to a violation of the sleep cycle. Prolonged nighttime wakefulness and frequent nighttime awakenings contributed to decreased sleep efficiency. We did not analyse the cases of short (mostly unconscious) and long (more than 3 minutes) awakenings separately because they have a common mechanism of formation, and their duration is reflected in the duration of night wakefulness.

The study identified a number of sleep disorders in IDPs: insomnia, daytime sleepiness and fatigue due to high levels of stress. The use of questionnaires in diagnostic studies of insomnia is practical and reasonable, and the combination of questionnaires is the optimal method for assessing sleep disorders, their expression and characteristics. The results of the examination and treatment of patients with anxiety-depressive disorders associated with sleep disorders, mainly based on the Regional Centre for Psychotherapeutic

Rehabilitation and Psychoprophylaxis of Internally Displaced Persons in Kyiv, were analysed.

The Athens Insomnia Scale is widely used to assess insomnia. A person's sleep pattern is assessed using eight different sleep-related parameters.

Anamnestic, clinical and psychopathological methods were used in accordance with generally accepted approaches to the primary psychiatric examination, which was carried out using the appropriate Morin psychometric scale (assessment of insomnia severity and sleep quality). The subjects' insomnia severity was assessed using the Insomnia Severity Index (ISI) developed and validated by CH. Morin (test sensitivity – 86.1%, specificity – 87.7%) and allowed the type and severity of insomnia to be assessed. The Epworth Daytime Sleepiness Scale (ESS) has been shown to be effective in diagnosing obstructive sleep apnoea (OSA), narcolepsy and idiomatic sleepiness. This technique allows you to measure daytime sleepiness in points. It is known that daytime sleepiness is a direct consequence of disrupting the typical structure of nighttime sleep.

Sleep disturbance in both groups was assessed using the Insomnia Severity Index. The study was conducted in patients with anxiety-depressive disorder of neurotic origin with sleep disorders and in patients with anxiety-depressive disorder of organic origin with sleep disorders.

According to the results, there were no statistically significant differences between the groups regarding difficulty falling asleep, frequent and/or prolonged awakenings and reduced activity due to problematic sleep;these indicators generally corresponded to a high severity level.

In both groups, the overall severity of insomnia corresponded to the average severity. In addition, the indicators of early morning awakening and concern about poor sleep were statistically significantly higher in the group of patients with anxiety-depressive disorders of organic origin with insomnia. We have considerations about the conditionality of these differences due to the duration of the disease and the presence of concomitant organic pathology in the group of patients with anxiety-depressive disorders of organic origin.

Our study results show that indicators of situational anxiety and personal anxiety correlate with insomnia severity – statistically significant relationships of moderate strength were found. As anxiety increases, insomnia severity rises and vice versa. It can be argued that sleep disturbances and pathological anxiety complicate each other and worsen the quality of life of the subjects; therefore, in the treatment of anxiety-depressive disorders of various genesis, it is essential to pay special attention to the correction of sleep disturbances. It has been shown that general sleep quality indicatorsstrongly correlate with the severity of insomnia.

Based on the data obtained, diagnostic criteria for anxiety-depressive disorders with sleep disturbances of different genesis were formed. Accordingly, the general psychopathological characteristics of dyssomnias, depression, anxiety and asthenic syndromes were established as the leading ones for these disorders and differences were identified depending on the genesis of the mental illness.

In summary, insomnia is the most common sleep disorder that can occur in the context of a somatic or mental illness as well as in the context of relative well-being. Insomnia is a clinical syndrome that combines several types of sleep disturbance. Insomnia can lead to the development of cardiovascular and neurodegenerative diseases and cognitive disorders and significantly reduce quality of life and human performance. There are clinical forms of insomnia: chronic, acute or idiopathic. Acute insomnia lasts less than 3 months and

is usually associated with an acute stressful event. In this case, the doctor should treat it with sleeping pills. Chronic insomnia lasts more than 3 months and usually requires cognitive behavioural therapy, with sleeping pills as an adjunct.

Idiopathic insomnia is a lifelong condition that is difficult to treat. These forms of insomnia require special attention from specialists who have access to the full range of psychopharmacological treatments and work with psychologists. Four factors influence the development of insomnia: biological, psychological, social and behavioural. Insomnia disorders are divided into presomnias (sleep disturbances), intrasomnias (sleep disturbances) and postsomnias (dissatisfaction with sleep quality). The most effective method of treating insomnia is cognitive behavioural therapy, used in combination with medication. Cognitive behavioural therapy has advantages over medicines because it has a lower risk of side effects with long-term use. Group cognitive behavioural therapy can be recommended as a first-line treatment for insomnia in adults of all ages.

The causes of insomnia are

- Stress and psycho-traumatic situations characterised by sleep disturbances;
- Poor sleep hygiene (late going to bed, early waking up, lack of sleep, irregular sleep);
- Environmental changes (time zone changes, shift work with disruption of the sleep-wake cycle);
- Diseases that cause physical discomfort and are accompanied by a pain syndrome, as there is an emotional experience of the fact of one's own illness and/or symptoms that interfere with sleep (pain, cough, nocturnal polyuria), hyperthyroidism;
- mental and neurological diseases (brain tumours with localisation of the process in the areas responsible for the processes of the sleep-wake cycle, neuroses), especially those accompanied by depression, substance abuse – alcohol, caffeine, food additives;
- taking various drugs – psychostimulants (caffeine, some antidepressants, sympathomimetics) and glucocorticoids, thyroid hormones, decongestants and antitussives, hypercholesterolaemic drugs, theophylline.

There is a strong association between insomnia and psychiatric disorders such as depression, anxiety and post-traumatic stress disorder (Riemann D.,2007)

Comorbid conditions such as restless legs syndrome, chronic pain, obstructive sleep apnoea and parasomnias also increase the risk of insomnia (Katz D.A., McHorney C.A., 2022) People with certain personality traits, such as perfectionism, ambition, neuroticism, low extraversion, depression and anxiety, have a higher risk of developing insomnia (Taylor D.J., Lichstein K.L., Durrence HH., 2008).

Sleep disorders have significant consequences: a decrease in general health and immunological homeostasis, mental and emotional disorders, migraines and reduced work productivity.

Insomnia has a particularly detrimental effect on cardiac patients because sleep is the primary regulator of the body's circadian biological rhythms, and cardiovascular pathology itself creates conditions for disruption of human circadian rhythms.

In addition to the existing circadian changes, sleep disorders accompany and aggravate the course of the pathology. The diagnosis of insomnia is based on a list of its clinical signs and variants.

The problem of modern pharmacotherapy of sleep disorders consists of two tasks. The first is to choose a drug that, at a minimal dose, promotes rapid sleep and reduces the number of night wakes. The second task is much broader and relates not to quantitative assessments

but to qualitative indicators that characterise the drug's effect on the human body, inducing sleep but not interfering with its structure, not affecting daytime well-being or reducing the quality of life. The primary task in the treatment of insomnia is to eliminate or minimise the causes of insomnia, if possible, without the use of sleeping pills. Psychotherapeutic measures, which require the involvement of a well-trained specialist, help to improve sleep.Insomnia can be triggered by psycho-emotional, physical overload, illness, stress and many other factors. Depending on the severity and duration of the traumatic event and the individual significance of the event, the range of sleep disturbances can vary from mild episodic to chronic severe forms. Patients with chronic insomnia are reluctant to seek medical help for complaints of poor sleep.

Cognitive behavioural therapy is a structured programme designed to identify and change automatic negative thoughts and correct maladaptive behaviour. Automatic thoughts in insomnia are most commonly associated with unrealistic expectations of sleep, catastrophising the consequences of sleep disturbance, and fear of not falling asleep. Psychotherapeutic techniques aim to stop monitoring sleep and one's state after waking up.

CBT-I can be done on an individual basis or in a group setting. Internet-based applications are becoming increasingly popular, and their effectiveness is close to group or individual psychotherapy. The advantage of virtual therapies is that they are cost-effective for the patient, less time-consuming and suitable for people who, for various reasons, are reluctant or unable to visit a psychotherapist. The main limitation of electronic versions is the need for self-control and self-organisation skills, which in classical psychotherapy are created by the therapist through the regularity of sessions. Self-scheduling of sessions can lead to missed sessions and decreased motivation. A modification of classical therapy is a variant of CBT-I consisting of 1–2 sessions or telephone calls, the effectiveness of which has been confirmed in studies. Several components of CPT can be distinguished: sleep stimulus control, cognitive therapy, sleep hygiene, relaxation techniques, and sleep restriction. Some methods are effective as a single therapy, but maximum effectiveness is achieved with a multi-component treatment that includes all the methods. (Walker J., Muench A., Perlis M.L., Vargas I., (2022).

*Stimulus control.*This method aims to create a pattern of behaviour aimed at strengthening the associative link between bed and sleep (Sateia M.J., Pigeon W.R., 2004)

Patients are encouraged to create a new pattern of behaviour that includes the following items [40]:

- eliminate any activity in bed other than sleep and sex;
- go to bed only when feeling sleepy, not physically tired;
- if unable to fall asleep within 15–20 minutes, get out of bed, go to another room and engage in quiet activities, e.g. reading;
- return to the bedroom only if you feel drowsy while doing quiet activities;
- Morning wake-up time should be constant regardless of the length of sleep; the routine should also be maintained on weekends.

Stimulus control is effective for insomnia patients with difficulty falling or staying asleep. It can be used alone or in combination with other techniques.

Limit sleep time. Sleep efficiency is achieved by reducing the time spent in bed, resulting in less time spent falling asleep and fewer night wakes. Bedtime should be at least 4.5–5 hours to avoid daytime sleepiness. Because of the reduction in nighttime sleep, sleepiness occurs more quickly in the evening, promoting rapid falling asleep. After increasing sleep efficiency, the duration of night sleep is gradually increased (by 15–20 minutes per week), and if efficiency decreases (below 80%), it is reduced. Sleep efficiency is calculated using the formula: sleep time divided by time spent in bed multiplied by 100%. Sleep with a result of more than 85% is considered adequate. Sleep duration should not increase even after a night of disturbed sleep; constant compliance is necessary to synchronise the body's circadian rhythm, which regulates sleep and wakefulness.Sleep restriction and stimulus control are equated with pharmacotherapy regarding effectiveness in treating insomnia. Implementing this method is difficult because patients may experience daytime sleepiness, affecting their well-being and performance, and therefore refuse to use it. It requires a high level of motivation and daily compliance. This method is effective as a single therapy or in combination with other methods and eliminates intrasomniac and presomniac sleep disorders.

Sleep hygiene. The original sleep hygiene recommendations

The original recommendations for sleep hygiene were based on clinical observations of patients with sleep disorders. Then, the recommendations were developed into a list of sleep patterns, environmental conditions and other sleep-related factors. According to the sleep hygiene model, insomnia occurs in patients who deviate from the behavioural patterns necessary for good quality sleep. Sleep hygiene aims to make lifestyle changes to improve sleep efficiency through the following recommendations:

- Adherence to the schedule (going to bed and getting up at the same time on weekdays and weekends); and the same time on weekdays and weekends);
- Avoid naps during the day, especially in the afternoon;
- Avoid late dinner;
- Avoiding late-night alcohol, coffee and tea; smoking before going to bed;
- Organise physical activity no later than 3 hours before bedtime;
- Reduce mental workload before bedtime, postpone important tasks until the morning;
- Adhere to a diet and exercise regime;
- Take a warm shower before going to bed;
- Organisation of sleeping conditions (comfortable bedding comfortable bedding, airing the bedroom, reducing noise and light in the bedroom);
- Avoiding liquids, including water, in the late evening and before going to bed;
- Avoiding looking at the clock during night waking;
- Using recordings of simulated 'white noise'.
- Baths or aromatic oils with a relaxing effect (coniferous oil, sea salt).

The Sleep Hygiene Index, Sleep Hygiene Awareness Scales and Sleep Hygiene Practices are used to assess sleep hygiene. Applying sleep hygiene rules outside of therapy sometimes improves sleep efficiency, but this method is often successfully used in conjunction with other CBT-I techniques.

Relaxation techniques. Relaxation therapy is based on the high level of physiological and cognitive arousal during the day and night in patients with insomnia.

Relaxation techniques include progressive muscle relaxation, autogenic training, visualisation techniques, breathing exercises and mindfulness therapy. These techniques help to reduce ideatoric (automatic anxious thoughts) and motor arousal. Progressive muscle relaxation is a well-known method of reducing somatic tension by alternately contracting and relaxing muscles in an orderly sequence from head to toe. Most studies confirm Progressive Muscle Relaxation's effectiveness in treating insomnia. The method is relatively simple, so patients can learn it quickly and use it independently for presomniac and intrasomniac sleep disorders. The use of mindfulness techniques has also been shown in several studies to be an effective treatment for insomnia when combined with CBT-I. Still, more research is needed to establish its effectiveness. Patients can practise the techniques during the day, and once they have mastered them, they can use them independently to help them fall asleep and wake up at night. Relaxation techniques focus on physical (muscle relaxation) and psychological (creating relaxing images, imagining the face of a sleeping person). Relaxation techniques effectively treatintrasomnial and presomnial sleep disorders, and their daily use produces long-term positive results.

Cognitive techniques. In the cognitive model of insomnia, chronicity factors include intrusive pre-sleep thoughts, dysfunctional beliefs about sleep, increased pre-sleep anxiety, impaired daytime functioning and restrictive behaviours. Patients eliminate anything from daily life that they believe may disrupt sleep, creating maladaptive habits that disrupt sleep even more, leading to a vicious cycle of anxiety. Cognitive therapy aims to identify the patient's dysfunctional beliefs about sleep and replace them with adaptive ones.

Before starting cognitive therapy, a discussion should be held to identify automatic negative thoughts and misconceptions about sleep. For example, some patients believe that all healthy people should sleep 8 hours a day without waking up and always feel rested and full of energy. Patients may focus too much on the discomfort of sleep disorders and overestimate their impact on daily activities. They may be afraid of making a mistake after a night of disturbed sleep, but often, these fears only remain in their minds, or minor mistakes are made that can be made when they are feeling well. The effectiveness of cognitive techniques has been confirmed when used in conjunction with other methods. (Altena, E., Ellis, J., Camart, N., Guichard, K., & Bastien, C., 2023).

Patients with insomnia are characterised by behaviours associated with monitoring and evaluating their condition, well-being, pain, sleep duration and quality. Excessive attention to sleep increases activation and maintains wakefulness, resulting from fear of not sleeping at night. Sleep disturbance leads to anxiety, which in turn provokes sleep monitoring, perpetuating maladaptive behaviour.Reducing anxiety reduces muscular and ideational arousal and normalises sleep. The less a person focuses on the difficulty of falling asleep, the more likely they are to fall asleep quickly. In such cases, the method of paradoxical intention, developed for treating phobias, can be used. The patient is asked to do what they are most afraid of, i.e., in the case of patients with insomnia, to limit their sleep consciously. Increased activation in patients with insomnia leads to increased attention to internal (muscle tone, thoughts) and external (extraneous sounds, lights, clocks) factors. Watching the clock is associated with prolonged time to sleep onset, disturbing thoughts about sleep and impaired sleep perception.

The mass introduction of CBT-I for insomnia is limited by the lack of psychologists or other professionals trained in the technique and by the labour-intensive

nature of the method. CBT-I is not recommended for significant cognitive decline, where this type of therapy is not practical.

However, CBT-Ibenefits cognitive function in people with moderate cognitive impairment before treatment. In the treatment of chronic insomnia, the use of psychotherapeutic techniques is considered a priority, and drug treatment is recommended if non-pharmacological therapies are ineffective.Sometimes, light therapy is incorporated into the structure of CPT for insomnia. Exposure to bright light can stabilise or shift the body's circadian rhythm. Early morning light exposure is used to treat patients with delayed sleep phase, and evening light exposure is used to treat patients with early morning awakening. Evening light exposure should be reduced to achieve the desired effect in patients with sleep latency. Usingunique sunglasses that block blue wavelengths in the evening is recommended. Wearing sunglasses in the morning is recommended for patients with early morning awakening.

CBT-I is, therefore, one of the most effective treatments for insomnia that can be used with or without medication. The use of CBT-I is not yet sufficiently widespread in our country. Still, introducing this method can help patients and significantly reduce the economic losses associated with insomnia for society. A study of the cost-effectiveness of online cognitive behavioural therapy sessions concluded that this therapy format is 87% more likely to be effective than traditional therapy.

Conclusions.

In modern medicine, sleep is not only a passive process, a period of rest or slowing down of sensory perception, but also the result of the lack of differentiation of afferent impulses received by the brain and the functional activation of neurons in a particular area of the brain. Numerous studies have shown that quantitative and qualitative sleep disorders affect cognitive, emotional and other psychological functions of the body. Sleep disorders are considered to be a fairly common phenomenon.

The most effective treatment for insomnia is cognitive behavioural therapy, which is used in combination with pharmacological therapy. It is a focused and directive method of treatment in which the patient plays an active role and takes some responsibility for the treatment. The most effective treatment for insomnia is cognitive behavioural therapy, which is used in combination with medication. Cognitive behavioural therapy has advantages over medicines because it has a lower risk of side effects with long-term use. This type of therapy is given for a limited period – 4 to 8 sessions. It is a focal and directive method of treatment in which the patient plays an active role and takes some responsibility for the treatment. The main tools of cognitive behavioural therapy are provocation and reinforcement. A necessary step in the treatment of sleep disorders is the identification of possible causes of sleep disorders, which includes not only a system of diagnostic procedures but also the active work of the patient in clarifying and understanding the psychological factors that cause or aggravate sleep disorders. First, it is necessary to note the possibilities of cognitive psychotherapy, which is aimed at forming the patient's correct attitude to existing sleep disorders, correcting arbitrary and irrational thoughts and conclusions, and replacing "disturbing" thoughts with calmer ones. In the cognitive model of insomnia, fear of 'not falling asleep', intrusive thoughts before sleep and dysfunctional beliefs about sleep are considered chronicity factors.

Several trials of next-generation behavioural treatments for sleep disorders (particularly mindfulness training) have shown promising results in both effectiveness

and cost (treatment is mainly group-based). At the same time, the effectiveness of these innovative techniques was not inferior to that of cognitive behavioural therapy. According to the results of a pilot intervention study, using a combined training programme (mindfulness training and CBT-I) by its participants helped reduce sleep disturbance to a non-clinically significant level in most patients.

Cognitive Behavioural Therapy (CBT-I), in the work of a psychologist or the cognitive behavioural approach, is a set of trends and strategies constantly being developed and added to by scientists. The basic premise of cognitive therapy is that all emotional reactions and human behaviour depend on cognitions – prejudices, thoughts and interpretations of phenomena and events in one's life and perceptions of oneself. In other words, it is not the vital event but the person's explanation of it as causing certain emotions or behaviour. Each person reacts emotionally or behaviourally to and interprets an event differently, which is called 'cognition'. Everyone is unique; different life experiences shape our beliefs, understandings, and opinions. Thus, CBT-I is a modern method that takes a holistic and systematic approach to understanding personal problems, taking into account the sphere of thoughts, emotional reactions, behaviour and physiology, and the influence of the environment, allowing for a comprehensive vision of difficulties and quality care.

References

Altena, E., Ellis, J., Camart, N., Guichard, K., & Bastien, C. (2023). Mechanisms of cognitive behavioural therapy for insomnia. *Journal of Sleep Research*, 32(6), e13860. https://doi.org/10.1111/jsr.13860

Bentham, C., & Eaves, L. (2021). The Impact of Cognitive-Behavioral Interventions on Sleep Disturbance in Depressed and Anxious Community-dwelling Older Adults: A Systematic Review. *Behavioral Sleep Medicine*, 20(4), 477–499. https://doi.org/10.1080/15402002.2021.1933488

El Basiouny, E.D D, Habib HI. (2023). Cognitive Behavioral. Therapy for Insomnia (CBT-I): A Comprehensive Review. *Indian J Sleep Med.* 18(4), 62–65. https://doi.org/10.5005/jp-journals-10069-0123

Eus J. W. Van Someren, (2021). Brain mechanisms of insomnia: new perspectives on causes and consequences. *Psychological Reviews.* 04 June 2021 https://doi.org/10.1152/physrev.00046.2019

Katz D.A., McHorney C.A. (2002). The relationship between insomnia and health-related quality of life in patients with chronic illness. *J Fam Pract.* 2002,51(3), 229–235. https://pubmed.ncbi.nlm.nih.gov/11978233/

Lannon-Boran, C., Hannigan, C., Power, J. M., Lambert, J., & Kelly, M. (2023). The effect of mindfulness-based intervention on cognitively unimpaired older adults' cognitive function and sleep quality: a systematic review and meta-analysis. *Aging & Mental Health*, 28(1), 23–35. https://doi.org/10.1080/13607863.2023.2228255

Mao X, Zhang F, Wei C, Li Z, Huang C, Sun Z, et al. (2023). The impact of insomnia on anxiety and depression: a longitudinal study of non-clinical young Chinese adult males. *BMC Psychiatry.* 23, 360. http://doi.org/10.1186/s12888-023-04873-

Morin C. M, Jarrin D. C. (2022). Epidemiology of insomnia: prevalence, course, risk factors, and public health burden. *Sleep Med Clin.* 17–91. http://doi.org/10.1016/j.jsmc.2022.03.003

Morin C.M., Hauri P.J., Espie C.A., Spielman A.J., Buysse D.J., Bootzin R.R. (1999). Nonpharmacologic treatment of chronic insomnia. *An American Academy of Sleep Medicine review. Sleep*.22,1134–1156.
https://doi.org/10.1093/sleep/22.8.1134

O'Regan D, Garcia-Borreguero D, Gloggner F, Wild I, Leontiou C and Ferini-Strambi L (2023) Mapping the insomnia patient journey in Europe and Canada. *Front. Public Health* 11:1233201. https://doi.org/10.3389/fpubh.2023.

Riemann D. Insomnia and comorbid psychiatric disorders. *Sleep Med.* 2007 Dec;8 Suppl 4,15-20. https://doi.org/10.1016/S1389-9457(08)70004-2.

Riemann, D., Espie, C. A., Altena, E., Arnardottir, E. S., Baglioni, C., A. Bassetti, C. L., Bastien, C., Berzina, N., Bjorvatn, B., Dikeos, D., Groselj, L. D., Ellis, J. G., Garcia-Borreguero, D., Geoffroy, P. A., Gjerstad, M., Gonçalves, M., Hertenstein, E., Hoedlmoser, K., Hion, T., . . . Spiegelhalder, K. (2023). The European Insomnia Guideline: An update on the diagnosis and treatment of insomnia. *Journal of Sleep Research*, 32(6), e14035. https://doi.org/10.1111/jsr.14035

Sateia M.J., Pigeon W.R. (2004). Identification and management of insomnia. *Med Clin North Am.* 88, 567–596. https://doi.org/10.1016/j.mcna.2004.01.008.

Sella, E., Miola, L., Toffalini, E., & Borella, E. (2021). The relationship between sleep quality and life quality in ageing: a systematic review and meta-analysis. *Health Psychology Review*, 17(1), 169–191. https://doi.org/10.1080/17437199.2021.1974309

Taylor D.J., Lichstein K.L., Durrence HH. (2003). Insomnia as a health risk factor. *Behav Sleep Med.* 1(4), 227–47.
https://pubmed.ncbi.nlm.nih.gov/15600216/

Thondala, B., Pawar, H., Chauhan, G., & Panjwani, U. (2023). The effect of non-pharmacological interventions on sleep quality in people with sleep disturbances: A systematic review and a meta-analysis. *Chronobiology International*, 40(10), 1333–1353. https://doi.org/10.1080/07420528.2023.2262567

Xu, M., Li, B., Wang, S., Chen, C., Liu, Z., Ji, Y., Liu, K., & Niu, Y. (2024). The brain in chronic insomnia and anxiety disorder: A combined structural and functional fMRI study. *Frontiers in Psychiatry*, 15, 1364713. https://doi.org/10.3389/fpsyt.2024.1364713

Zhou, F., Li S., Xu H. (2022) Insomnia, sleep duration, and risk of anxiety: A two-sample Mendelian randomization study. *J Psychiatr Res.* 155, 219–25. https://doi.org/10.1016/j.jpsychires.2022.08.012

Walker J., Muench A., Perlis M.L., Vargas I. (2022). Cognitive Behavioral Therapy for Insomnia (CBT-I-I): A Primer. Klin *Spec Psihol.* 11(2):123-137. https://doi.org/10.17759/cpse.2022110208.

Wei, J., Xu, Y. & Mao, H. (2024). Mobile cognitive behavioural therapy for insomnia: analysis of factors affecting treatment prognosis. *Sci Rep* 14, 3086. https://doi.org/10.1038/s41598-024-53119-8