


Non-pharmacological therapeutic approaches for the treatment of insomnia: An integrative review

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ABSTRACT

The advances made in medicine, through studies and research, can offer more and more effective treatments for various types of illness, both with the use of drugs and non-pharmacological treatments. With regard to insomnia, a disease characterized by difficulty sleeping and loss of circadian cycle quality, for a long time it was treated, in most cases, only with the use of drugs that remedied this condition, but did not act on the core of the disease and the real cause, only alleviating the symptoms. In addition, many drugs for the treatment of insomnia are addictive, leading patients to use them constantly. The integrative review aimed to identify non-pharmacological treatment for insomnia, pointing out various methods used with patients, analyzing the treatment process, efficacy, clinical applicability and safety. Trustworthy and credible websites such as PubMed, LILACS and VHL were used to collect data and research sources, using the descriptors "Sleep Onset and Maintenance Disorder and Non-Pharmacological". In this way, relevant data, experiences and evidence were obtained for the analysis of non-pharmacological treatments for insomnia, among the various methods found. In conclusion, non-pharmacological therapeutic approaches represent a vital component in the treatment of insomnia, offering substantial benefits without the risks associated with prolonged use of medication. Their incorporation as part of an integrated and personalized treatment plan can significantly improve the quality of life of individuals affected by insomnia.

Keywords: Sleep onset disorders, Sleep Maintenance, Non-Medication.

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INTRODUCTION

At first, when a person is faced with an illness, one of the main thoughts that arises is what medication they will use to treat themselves, however, there are several non-pharmacological methods that are used to correct illnesses and, referring to insomnia, this article will discuss some non-pharmacological treatments, such as acupuncture, medicinal plants, physical exercise and cognitive-behavioral therapy. In relation to physical activity, studies carried out with patients who didn't practice any sport and sought treatment for insomnia, were recommended to start practicing some physical activity, after some time, engaged in sports, new tests were carried out and noted an improvement in the insomnia condition of patients who opted for this type of treatment¹.

With regard to the use of medicinal plants, a number of advantages have been noted in their use, such as improvement in the condition of insomnia without any use of drugs that cause chemical dependency, but with medical supervision to guide which plants should be used and the effects on the patient's body, taking extreme care with the patient's health². Cognitive-behavioral therapy combines cognitive, behavioral and emotional techniques for the treatment of insomnia, and is recommended for treatments without comorbidities, both in acute and chronic cases, with good efficacy that can last up to a year^{3,4}.

However, there are some techniques that help to treat insomnia while maintaining patients' health, methods that will be explained in detail throughout this article, clarifying and bringing recent studies that prove these methods. The integrative review aimed to identify non-pharmacological treatment for insomnia, pointing out various methods used with patients, analyzing the treatment process, efficacy, clinical applicability and safety.

MATERIALS AND METHODS

This study is an integrative review, a type of systematic bibliographic review, which is defined as a careful search and evaluation of what is being debated in the literature on a specific topic. It was therefore carried out in six processes: 1) determining the topic and choosing the central research question; 2) establishing inclusion and exclusion criteria; 3) establishing the data to be extracted from the selected studies; 4) categorizing the studies; 5) analyzing the studies included in the integrative review and interpreting them; 6) demonstrating the review¹.

At the start of the process, the central question that guided the current research was determined: "What are the non-pharmacological treatment strategies for treating insomnia?".

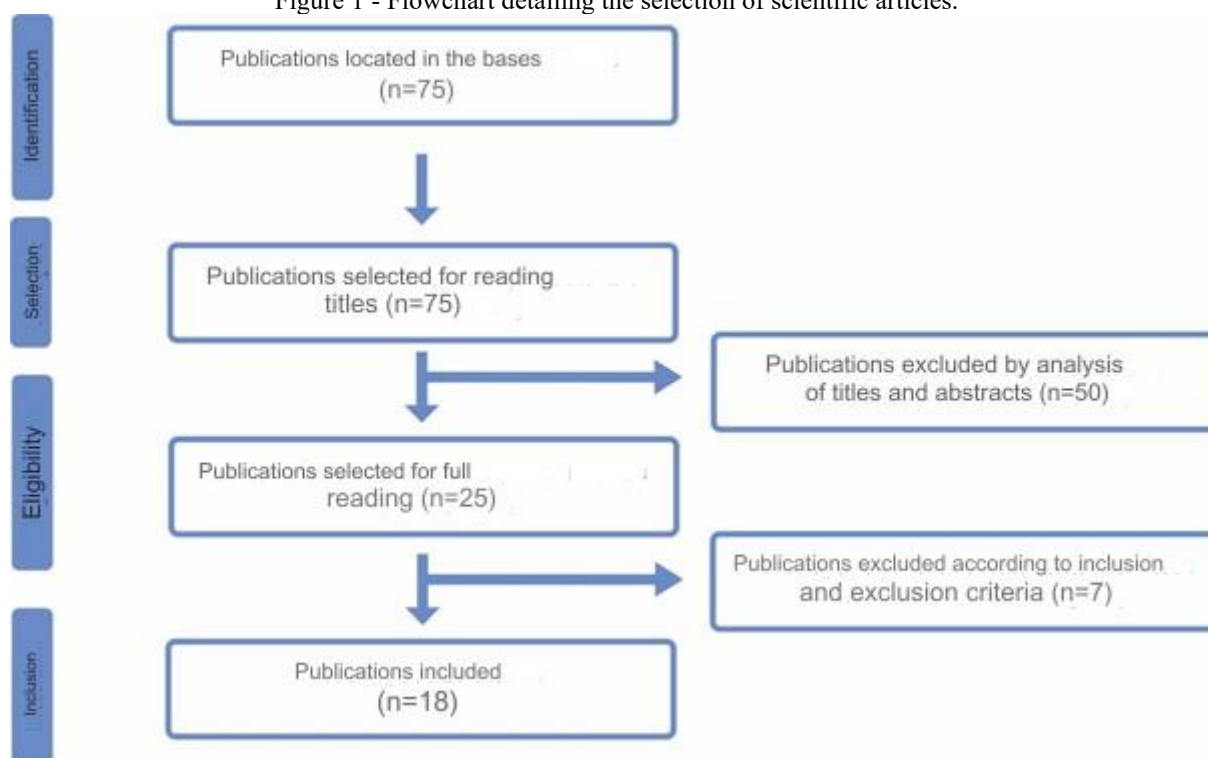
In order to answer this question, a search was made for studies related to the idealized result using Health Sciences Descriptors created by the Virtual Health Library. The descriptors used were: Sleep Onset and Maintenance Disorders. The search was carried out during the month of March 2024, using the following databases: Virtual Health Library (VHL), Scientific Electronic Library

Online (SciELO), National Library of Medicine (PubMed) and Latin American and Caribbean Health Sciences Literature (LILACS).

Thus, the inclusion criteria were restricted to research written in Portuguese and English, published between 2019 and 2024, which represented the current subject, and were accessible electronically in their complete form. The exclusion criteria were studies which were not in English or Portuguese, which were published before 2019 and those which did not provide a range of information about sleep onset and maintenance disorders, as they did not fit the criteria listed.

After the initial selection of research, 75 were identified and evaluated based on the established criteria, by reviewing the titles and abstracts of the articles. As a result of this process, 25 articles were chosen to proceed to the next stage of the survey. These articles were then carefully examined, again taking into account the inclusion and exclusion criteria. As a result, seven studies did not meet the inclusion criteria and were excluded. Therefore, 18 articles were selected for the final assessment and compilation of the review in question. In addition, the data from these selected studies was filed to ensure that the most relevant information was collected (Figure 1).

Figure 1 - Flowchart detailing the selection of scientific articles.



RESULTS

Among the 18 scientific articles that were obtained from searches on the VHL, Pub Med and SciELO platforms, the Portuguese language predominated (77% n=14) and the predominant year of publication was 2019 (33.3% n=6), followed by 2023 (22.2% n=4). Of the 18 studies included in this review, 100% (n=18) deal with the non-pharmacological treatment of insomnia, which includes

acupuncture, medicinal plants, physical exercise and cognitive-behavioral therapy. In addition, 89% (n=16) of the studies looked at adults diagnosed with insomnia without other comorbidities. The remainder (11.1%; n=2) included a person with an anxiety disorder and the other study included people with hypertension (Table 1).

Table 1 - Overview of the studies included in this integrative review on therapeutic approaches for the treatment of insomnia.

AUTHOR/YEAR	MAIN FINDINGS
Davidson et al. (2019) ⁵	In general, Cognitive-Behavioral Therapy for Insomnia (CBT-I) is gradually being integrated into primary healthcare systems that promote interdisciplinary teamwork. This review highlighted some variation in intervention components, sleep disorder screening and CBT-I training of healthcare providers - all of which are potential moderators that require further investigation. Future studies should use standardized sleep measures, assess daytime symptoms, and examine the impact of gradual hypnotic reduction interventions delivered as part of CBT-I programs for primary care patients.
Espien et al. (2019) ⁶	The results of this conclusive study suggest that Digital Cognitive-Behavioral Therapy (DBT) is not only effective in reducing insomnia symptoms, but also demonstrates wide-ranging positive effects, including improved functional health, psychological well-being and sleep-related quality of life in people who screen positive for insomnia disorder. In addition, the reduction of insomnia symptoms plays a mediating role in these benefits. These results indicate that CBTd benefits both the daytime and nighttime aspects of insomnia, further reinforcing the clinical guidelines' recommendation that CBT is the preferred treatment for insomnia.
Passos et al. (2019) ¹	The results indicate that there was a significant reduction in total scores from the first to the second collection, reflecting an improvement in sleep quality for all participants, regardless of the regularity of physical activity.
Bichara et al. (2019) ⁷	Participation in the workshops gave the population access to simple and practical information to improve sleep quality. The implementation of non-pharmacological measures for insomnia not only reduces the use of potentially inappropriate medication and the costs associated with complications such as falls and fractures, but also relieves the health system financially (Ferreira; Yoshitome, 2010; Cassoni, 2011; Leira Pereira et al., 2012; Friestino; Freitas, 2016) apud Bichara et al. ⁷ However, the lack of adherence of health units to the project limited the target audience's access to this information. In addition, understanding the information on the leaflets may have been hampered by the high illiteracy rate and visual problems in part of the population.
Souza et al. (2019) ⁸	Adolescents undergoing treatment for insomnia using Cognitive-Behavioral Therapy (CBT) techniques showed significant improvements in several aspects, such as reduced anxiety (60%), faster sleep onset (60%), increased sleep quality (80%), reduced daytime sleepiness (60%) and relaxation (10%). According to Blake et al. (2017), adolescents showed changes in planning, decreased worry, muscle tension and autonomic activity after treatment for anxiety and insomnia. The main treatments identified in the studies include mindfulness (60%), sleep hygiene (60%), stimulus control (60%), sleep hygiene and education (40%), psychotherapy (40%), cognitive restructuring (20%) and drug treatment (20%). According to Blake et al. (2016), there is still much to be explored about CBT interventions in adolescent sleep.
Loio et al. (2020) ⁹	Cognitive therapy aims to instruct patients to change their negative thoughts and prepare them to face their fears. Stimulus control therapy focuses on extinguishing inappropriate behaviors before bedtime, while sleep restriction therapy establishes a restricted sleep schedule to improve sleep.

	<p>Relaxation is used to reduce somatic tension and control the mind, while sleep hygiene is key to improving insomnia in the long term. Phototherapy promotes sleep by synchronizing the biological clock with natural light. Acupuncture and herbal medicine are alternatives for improving sleep, although there are gaps in the research on their effectiveness.</p>
Neves et al. (2020) ¹⁰	<p>Based on the results of this study, it is possible to state that patients with hypertension who exercise regularly have less severe symptoms of insomnia and depression, as well as a better quality of life in terms of functional capacity and vitality, compared to those who are physically inactive. In addition, it was observed that the less severe the participants' insomnia complaints, the better their mood profile and quality of life. Future research of an experimental nature, investigating the effects of long-term physical exercise on the sleep and mood of patients with hypertension, is needed to confirm the conclusion that regular physical exercise can lead to a reduction in the severity of insomnia complaints and, consequently, improvements in the mood and quality of life of these patients.</p>
Rogério et al. (2021) ²	<p>Insomnia is common in Brazil and the use of sedative medicinal plants is popular. A study analyzed the popular and scientific names, indications and risks of plants such as lemon balm, passion fruit, valerian, hops and lavender. Chamomile is safe and effective, unlike hypericum, kava-kava and valerian, which require a prescription due to adverse effects. More research is needed on the use of these plants for insomnia, emphasizing the importance of guidance on their proper use for health and economic benefits.</p>
Sobral et al. (2021) ⁴	<p>Cognitive-Behavioral Therapy for Insomnia (CBT-I) is recommended as a first-line treatment for insomnia without comorbidities, in both acute and chronic cases, with positive results that can last up to a year. When there are comorbidities, its effectiveness varies: while in association with anxiety the results tend to be lower, in the presence of depression they are more promising. CBT-I also stands out for offering better outcomes in daytime symptoms and the absence of side effects, and is preferred by the majority of patients. Comparative studies between CBT-I and pharmacological treatment with benzodiazepines show comparable efficacy in the short term, but in the long term the therapy is considerably superior. The combination of CBT-I with zolpidem as medication has more favorable results in the acute phase of treatment, but CBT-I alone shows better results in the maintenance phase, especially when associated with discontinuation of medication, resulting in a reduction in symptoms in 60% of cases and remission of the condition in 40%. In addition, there is clear evidence of a reduction in the severity and frequency of migraines associated with insomnia in patients treated with CBT-I. Despite its proven effectiveness, CBT-I is still underused and often inaccessible in Primary Health Care in Brazil. Studies suggest the benefits of non-pharmacological treatment, including CBT-I and acupuncture, but the lack of access to these therapies in PHC hinders their use, despite their essential role in the proper management of insomnia. It is essential that family doctors are aware of the best therapeutic options, avoiding inappropriate prescriptions of psychotropic drugs and referring cases of secondary insomnia for specialized evaluation.</p>
Neves Júnior et al. (2021) ¹¹	<p>Cognitive-Behavioral Therapy (CBT) is a brief, structured therapeutic approach that aims to solve current problems and modify dysfunctional thoughts and behaviors. According to Beck et al.¹², the cognitive model suggests that dysfunctional thinking is common to various psychological disorders, and by learning to evaluate their thoughts more realistically, people can improve their emotional and behavioral state. By offering psychoeducation, CBT seeks to make patients understand the mechanisms of their condition, actively involving them in the therapeutic process. In anxiety disorders, CBT seeks to readjust cognition to influence emotions and behavior. For example, in insomnia, CBT aims to identify and confront specific dysfunctional thoughts related to the sleep disorder, addressing beliefs and behaviors that interfere with sleep quality through strategies such as stimulus control therapy, sleep restriction, sleep hygiene, relaxation training and cognitive therapy. When treating insomnia, the therapist</p>

	<p>focuses not only on changing lifestyle habits that affect sleep, but also on readjusting the patient's thoughts to promote effective improvement.</p>
Lopes et al. (2022) ¹³	<p>Nineteen clinical studies were analyzed which indicated that moderate-intensity aerobic and neuromotor exercise is beneficial for sleep quality as assessed by subjective scales. While objective sleep parameters such as total duration, latency and efficiency did not show evident improvements, the results showed that the weekly frequency of exercise sessions is directly related to improvements, being more significant with a greater weekly time investment. Notably, exercise programs with shorter follow-up (<15 weeks) showed more improvements, in contrast to the loss of benefits over time due to dropouts and irregularities in practice. One study highlighted that exercise carried out in the morning had superior advantages in terms of sleep quality compared to exercise carried out in the evening. Finally, it was observed that exercise benefits sleep quality in patients with diseases only when adapted to the patient's individual energy capacity.</p>
Forma et al. (2022) ¹⁴	<p>The recommendation by the American College of Physicians and the American Academy of Sleep Medicine (AASM) for Cognitive-Behavioral Therapy for Insomnia (CBT-I) as a first-choice treatment is not only based on the proven benefits of CBT-I, but also on its superior safety profile compared to pharmacological agents. Many medications present safety concerns, such as rebound insomnia, next-day sedation, increased errors in driving tests, addiction and increased risk of falls and confusion (especially in the elderly). On the other hand, CBT-I has a more favorable safety profile compared to medication, as well as a greater likelihood of remission of chronic insomnia symptoms. However, its use is limited by the systemic barriers mentioned above. To address the challenges related to access to CBT by qualified professionals, alternative forms of delivery have been developed, such as telephone-based interventions and, more recently, online platforms and mobile apps, which have the potential to broaden access to CBT-I and increase the availability of guideline-based interventions for chronic insomnia.</p>
Benz et al. (2023) ¹⁵	<p>This exhaustive survey analyzes insomnia symptoms as a risk factor for various physical disorders in a systematic way and with a pre-registered protocol. The results show that insomnia symptoms increase the risk of developing cardiovascular disease, hypertension and thyroid cancer. In addition, these symptoms may contribute to a greater susceptibility to obesity, cognitive decline and dementia, although the conclusions are divergent and inconclusive in this respect. On the other hand, there does not seem to be an association between insomnia symptoms and an increased risk of mortality. This issue is extremely important, as such findings suggest that early and effective treatment of insomnia symptoms can play a crucial role in prevention, as appropriately proposed. Several international clinical guidelines recommend Cognitive-Behavioral Therapy for Insomnia (CBT-I) as the main approach to treating insomnia disorder. However, this therapy is still underutilized in many countries, including those that do not value psychological interventions in primary care. A significant effort to improve the implementation and dissemination of this intervention could not only reduce the high prevalence of insomnia, but also decrease the risk of negative health impacts.</p>
Zhao et al. (2023) ¹⁶	<p>The aim of this systematic review was to identify and assess the quantity and quality of complementary and alternative therapy (CAM) recommendations in clinical practice guidelines for the treatment of insomnia. The intention is to help clinical professionals, especially those with little experience of CAM, to identify reliable, evidence-based therapeutic options. However, it was found that there are few high-quality CAM recommendations in these guidelines, which hinders communication and decision-making between patients and healthcare professionals. Despite this, the use of CAM is significant, with a substantial portion of the population turning to these therapies, especially in Asian countries. Melatonin, valerian and acupuncture are the most commonly used CAM therapies for insomnia, although some guidelines advise against the use of kava. In addition, other therapies popular with insomniacs, such as mental relaxation imagery, St. John's wort and spiritual healing, were not addressed</p>

	<p>in the guidelines reviewed. This gap between clinical use and clear recommendations in the guidelines can make it difficult for healthcare professionals to understand the benefits and risks of different CAM modalities, hindering shared decision-making with patients. This highlights the importance of considering patients' preferences and bridging the gap between clinical use and the guidance in guidelines.</p>
Simon et al. (2023) ¹⁷	<p>Currently, Cognitive-Behavioral Therapy for Insomnia (CBT-I) is poorly accessible in healthcare systems. Alternatives such as self-help therapy, like iCBT-I and guided bibliotherapy, can help increase the availability of CBT-I. Medium to large effects observed in iCBT-I and guided bibliotherapy suggest that these self-help approaches may be a viable alternative when face-to-face therapy options are not available. Thus, self-help interventions can complement care and reach patients who would otherwise not have access to CBT-I or would refuse treatment in conventional settings. Although this study did not show superiority between the different settings, face-to-face CBT-I, in particular face-to-face (F2F), groups and telehealth, showed the greatest effects. Given the magnitude of these effects and the solid evidence base for face-to-face CBT, this approach should be considered as the first treatment option. Therefore, it is crucial to improve the availability of face-to-face CBT as a priority to improve global health related to insomnia.</p>
Campos et al. (2023) ¹⁸	<p>Despite the short-term efficacy of both pharmacotherapy and CBT-I in the treatment of insomnia, recent studies suggest that CBT-I is the preferred treatment due to its more consistent medium- and long-term results and lower risk of adverse effects, with pharmacotherapy being considered when it is not possible to access or adhere to CBT-I, or in the event of therapeutic failure. Unfortunately, in primary care practice, sleep hygiene and pharmacotherapy are widely used to the detriment of CBT-I due to their scarcity in public services, resulting in a clear gap between recommended best practices and the reality of clinical care.</p>
Bezerra et al. (2024) ³	<p>Cognitive-Behavioral Therapy for Insomnia (CBT-I) is a highly effective approach that combines cognitive, behavioral and educational techniques to treat chronic insomnia. By modifying negative thought patterns and promoting healthy sleep habits, CBT-I improves sleep quality and reduces dependence on sleep medications. This integrated and personalized approach is seen as the future of insomnia treatment, seeking more effective and lasting results to improve the quality of life of those suffering from sleep disorders.</p>

DISCUSSION

Due to the magnitude of studies on insomnia and its symptoms, some authors have sought to understand the relationship between insomnia and the risk of developing physical disorders. Simon et al. (2023)¹⁷ analyzed the risks of developing cardiovascular diseases (myocardial infarction; coronary heart disease and others); hypertension and thyroid cancer due to insomnia, and the data obtained confirmed the relationship. The study analyzed the risk of dementia and obesity, but did not obtain complete data. The risk of mortality was also observed, but was disregarded. Forma et al. (2022)¹⁴ states that insomnia is also related to the risk of depression, Alzheimer's and chronic pain, as well as hypertension and cardiovascular diseases. Thus, with the advances in studies on insomnia and its symptoms, it has been necessary to observe and analyze treatments for sleep disorders.

The forms of treatment for insomnia analyzed were Cognitive Behavioral Therapy, the use of physical exercise and medicinal plants. Several studies have shown the importance of cognitive behavioral therapy (CBT) for the treatment of insomnia. Bezerra et al. (2024)³, Sobral et al. (2021)⁴;

Neves et al. (2020)¹⁰, Souza et al. (2019)⁸, Forma et al. (2022)¹⁴; Davidson et al. (2019)⁵; Espien et al. (2019)⁶ state that CBT is the best long-term therapy and is considered first-line treatment for people without comorbidities, seeking to offer a better quality of life for the individual and without dependence on drugs or side effects. Bichara et al. (2019)⁷; Campos et al. (2023)¹⁸; Sobral et al. (2021)⁴ point out that even with the quality of CBT-I, its supply is still not optimal due to the lack of adherence to CBT-I in health units, reducing the adequacy of this therapy, which is why the use of drugs in areas with scarce public resources is more recurrent. Bichara et al. (2019)⁷ the author also brings up the idea of the importance of using CBT to reduce spending on medication and provide peace of mind for the financial health system.

Another non-drug treatment for insomnia analyzed was the use of physical exercise. Passos et al. (2019)¹; Lopes et al. (2022)¹³; Neves et al. (2020)¹⁰ The authors report that physical exercise helps to improve sleep and quality of life, improving functional capacity and vitality. The author Neves et al. (2020)¹⁰ states that patients with hypertension and insomnia who exercise regularly have fewer symptoms than patients with the same comorbidities who do not exercise.

The last form of non-drug therapy analyzed is the use of medicinal plants to control insomnia. It is known that in Brazil the use of medicinal herbs has been present for many centuries and the use of this form of care is present in everyday life, so there is a need to analyze the types of plants that can help with sleep disorders. Thus, the author Rogério et al. (2021)² presents the herbs most used by Brazilians and their qualities and risks, the herb that brought the most quality to the care of sleep disorders was chamomile. However, there are still not many studies relating herbs to the treatment of insomnia, making it difficult for professionals to prescribe their use to their patients. Thus, the author Zhao et al. (2023)¹⁶ did not obtain concrete data on the use of plants as an alternative therapy for sleep disorders.

The conclusion drawn from the authors used is that the best therapy to use is CBT and physical activity because it helps efficiently and responsibly, improving the quality of life of individuals.

The author Sobral et al. (2021)⁴ relates CBT-I therapy with the use of benzodiazepines, which showed considerable results in the short term, but CBT in the medium and long term was the best way to treat insomnia. Thus, CBT needs improvements in investment in health to expand and improve its quality, but it remains the best form of non-pharmacological therapeutic approach.

According to the authors Passos et al. (2019)¹; Lopes et al. (2022)¹³; Neves et al. (2020)¹⁰, physical activity helps completely and improves not only the quality of sleep, but the quality of life as a whole.



The use of medicinal plants is positive, but there have not yet been many studies on the subject, as cited by the author Zhao et al. (2023)¹⁶ the lack of information hinders communication and decision-making between patients and health professionals.

CONCLUDING REMARKS

This article extensively reviewed the current literature on non-pharmacological therapeutic approaches for the treatment of insomnia, emphasizing the efficacy and applicability of various modalities, including cognitive-behavioral therapy for insomnia (CBT-I), relaxation techniques, sleep restriction therapy, sleep hygiene, among others. The studies reviewed consistently demonstrate that these interventions show promising results in the management of insomnia, offering safe and effective alternatives to pharmacological treatment. CBT-I stood out as the most effective approach, due to its more consistent medium- and long-term results and lower risk of adverse effects, contributing significantly to improved sleep quality, reduced sleep latency time, increased sleep efficiency and reduced wake time after sleep onset. Relaxation techniques, including mindfulness meditation and autogenic training, have also been shown to be beneficial, helping to reduce anxiety and promote relaxation, facilitating sleep induction. However, sleep hygiene and pharmacotherapy end up being the most used practices to the detriment of CBT-I due to their scarcity in public services, which leads to a gap between recommended practices and clinical reality. It is important to stress, however, the need to individualize treatment, taking into account the particularities and preferences of each patient, as well as the possibility of combining different therapeutic approaches to optimize results. In addition, the implementation of health education on sleep hygiene in community and clinical settings can serve as an effective preventative measure, minimizing the incidence of insomnia in the general population. In addition, the implementation of non-pharmacological measures reduces the inappropriate use of medication and the associated costs, which relieves the health system financially.

Finally, there is a need for more high-quality research to explore the potential of new non-pharmacological therapeutic approaches and evaluate the long-term effectiveness of existing interventions. Future research should also focus on developing strategies to facilitate patient access to these therapies, considering the current barriers related to costs, availability of qualified professionals and lack of awareness about non-pharmacological alternatives.

In conclusion, non-pharmacological therapeutic approaches represent a vital component in the treatment of insomnia, offering substantial benefits without the risks associated with prolonged use of medication. Their incorporation as part of an integrated and personalized treatment plan can significantly improve the quality of life of individuals affected by insomnia.



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