# Effectiveness of Cognitive Behavioral Therapy on Sleep Quality and Quantity in Adolescents with Depressive Symptoms

Alireza. Salehi[1] , Akbar. Atadokht Haji Siflo[2*] , Seyed Babak. Razavi Dole Malal[3]

[1] Department of Clinical Psychology, Kha.C., Islamic Azad University, Ardabil, Iran
[2] Professor, Department of Psychology, University of Mohaghegh Ardabili, Ardabil, Iran
[3] Department of Psychology, Kha.C., Islamic Azad University, Ardabil, Iran

\* **Corresponding author email address**: atadokht@uma.ac.ir

## Article Info

**Article type:**
*Original Research*

## ABSTRACT

**Objective:** This study aimed to evaluate the effectiveness of cognitive behavioral therapy (CBT) on improving the quantity and quality of sleep in adolescents with depressive symptoms.

**Methods and Materials:** The study employed a quasi-experimental pre-test–post-test design with a control group. The statistical population consisted of 4,137 middle and high school students in Khalkhal, Iran, during the 2024–2025 academic year. A total of 40 adolescents showing symptoms of depression were selected using convenience sampling and randomly assigned to an experimental group (n = 20) and a control group (n = 20). The intervention consisted of eight 70-minute CBT sessions delivered weekly. Data were collected using the Pittsburgh Sleep Quality Index (PSQI) and the Beck Depression Inventory (BDI), and analyzed using one-way analysis of covariance (ANCOVA).

**Findings:** ANCOVA results showed that the intervention had a statistically significant effect on both sleep quantity (F = 24.296, p < 0.001) and sleep quality (F = 22.224, p < 0.001), after controlling for pre-test scores. The experimental group demonstrated significant post-test improvements in both variables compared to the control group, indicating the effectiveness of CBT in enhancing sleep outcomes among adolescents with depressive symptoms.

**Conclusion:** Cognitive behavioral therapy is effective in improving both sleep quantity and quality in adolescents experiencing symptoms of depression. These findings support the application of structured CBT interventions within adolescent mental health services, particularly for addressing sleep-related issues associated with mood disturbances.

***Keywords:*** *Cognitive Behavioral Therapy, Sleep Quality, Sleep Quantity, Adolescents, Depression, Psychological Intervention.*

## 1. Introduction

Sleep plays a critical role in the physical and psychological well-being of adolescents. During this sensitive developmental stage, the body undergoes significant biological changes, including a shift in circadian rhythms and increased vulnerability to emotional disturbances. Among adolescents experiencing depressive

symptoms, sleep disturbances are among the most frequently reported comorbid problems. Poor sleep quality and insufficient sleep quantity have been associated with heightened emotional dysregulation, impaired academic functioning, and increased risk of mental health disorders such as depression and anxiety. Addressing sleep problems in adolescents with depressive symptoms is therefore essential to support their overall functioning and developmental trajectory. In recent years, cognitive behavioral therapy (CBT) has gained significant recognition as a first-line psychological intervention for addressing both mood and sleep disturbances across different populations, including adolescents, adults, and clinical subgroups (Arab & Mohammadi, 2023; Cojocaru et al., 2024).

Depression in adolescence is a growing public health concern, closely linked with persistent changes in sleep patterns and emotional processing. The negative impact of depression on both the quantity and quality of sleep has been well documented in the literature, with adolescents often reporting delayed sleep onset, night awakenings, and poor sleep efficiency (Orri et al., 2024). These disruptions, in turn, exacerbate depressive symptoms, creating a detrimental feedback loop. Cognitive behavioral therapy has been proposed as an effective strategy for breaking this cycle by addressing maladaptive thought patterns, emotional dysregulation, and behavioral factors contributing to insomnia and poor sleep hygiene (Yang et al., 2022; Zolrahim et al., 2024). CBT for insomnia (CBT-I), in particular, has demonstrated robust efficacy in improving sleep outcomes in individuals with co-occurring psychological disorders, including adolescents (Mason et al., 2023).

A growing body of research supports the effectiveness of CBT interventions in improving sleep quality and alleviating symptoms of depression and anxiety. Burns et al. (2022) confirmed that cognitive therapy and mindfulness-based interventions led to significant reductions in chronic pain and psychological distress, highlighting the importance of cognitive restructuring in therapeutic change. Similarly, CBT has shown significant effects in various clinical populations, including elderly individuals (Ibrahim et al., 2022), postmenopausal women (Ebrahimi et al., 2023), and patients with chronic illness (Zolrahim et al., 2024). CBT's core techniques—such as sleep hygiene education, stimulus control, and cognitive restructuring—enable individuals to reframe negative sleep-related beliefs and establish healthier sleep behaviors (Lai et al., 2021). These strategies are especially pertinent for adolescents, whose sleep challenges often arise from a combination of academic stress, social pressures, digital media exposure, and mood disturbances (Mariappan & Mukhtar, 2024).

Recent findings suggest that internet-delivered and group-based CBT programs are equally effective as individual face-to-face therapy in reducing insomnia symptoms among young people and shift workers (Ito-Masui et al., 2023; Ramfjord et al., 2023). CBT has also shown efficacy in improving sleep quality and executive functioning in student populations, particularly when integrated with sleep hygiene education and emotional regulation strategies (Mariappan & Mukhtar, 2024). These benefits are not limited to sleep alone; they extend to improvements in self-efficacy, emotion regulation, and academic performance. For example, Norian et al. (2023) found that CBT-based hypnotherapy improved both sleep and mental health outcomes among frontline healthcare workers during the COVID-19 crisis, further affirming the adaptability and effectiveness of CBT across settings and populations (Norian et al., 2023).

Furthermore, studies indicate that CBT is particularly well-suited to adolescents due to its structured, skills-based, and goal-oriented nature, which aligns with developmental needs for autonomy, agency, and emotional competence (Rahmani et al., 2024; Shabannezhad, 2024). Adolescents undergoing CBT not only gain insight into the interrelationship between thoughts, emotions, and behaviors, but also develop practical coping mechanisms for regulating arousal and initiating sleep. Langenecker and Schreinder (2024) showed that rumination-focused CBT reduced maladaptive thought loops and improved neural connectivity in youth with depression, underscoring its impact on both cognitive and biological processes (Langenecker & Schreinder, 2024). These findings are especially relevant for adolescents with depressive symptoms, where sleep disturbances may serve as both a symptom and a contributing factor to emotional dysregulation.

Gender and biological factors also play a role in how adolescents experience and respond to CBT for sleep improvement. Research by Elham et al. (2022) demonstrated that sleep-focused CBT was more effective in improving emotional capital in women with migraines compared to mindfulness and happiness training interventions (Aida Elham et al., 2022). Similar gender-based findings were observed by Kamalinasab et al. (2022), where CBT outperformed mindfulness in enhancing both sleep quality and cognitive performance in women with insomnia

(Kamalinasab et al., 2022). These findings suggest that the tailoring of CBT protocols to meet gender-specific or developmental needs may further enhance intervention efficacy.

Although several studies have explored the benefits of CBT in adults and clinical subpopulations, limited research has been conducted specifically among adolescents with depressive symptoms and sleep problems within school-based contexts. Cultural and contextual factors—such as educational stress, family dynamics, and digital media usage—may influence the manifestation of both depression and sleep issues in adolescents from different societies, including Iran. The work of Kiani Rad (2024), for instance, highlights the relevance of CBT for body image concerns in depressed women, reinforcing the notion that CBT can address both general and culturally specific psychological concerns (Kiani Rad, 2024). Similarly, Roghani et al. (2022) demonstrated the importance of emotion-focused interventions, such as play therapy, in improving executive functioning in children with ADHD, supporting the developmental relevance of targeted interventions for youth (Roghani et al., 2022).

Taken together, the existing literature suggests that CBT is a promising and evidence-based intervention for improving both psychological functioning and sleep-related outcomes in adolescents. However, more empirical studies are needed to investigate the effectiveness of CBT on both sleep quantity and quality in adolescents with depressive symptoms, particularly in non-Western contexts and educational environments. The current study addresses this gap by evaluating the impact of an eight-session CBT program on sleep quality and quantity among middle and high school students in Khalkhal, Iran, who exhibit symptoms of depression.

## 2. Methods and Materials

### 2.1. Study Design and Participants

The present study employed a quasi-experimental research design with a pre-test–post-test structure and a control group. The study population included all middle and high school students in Khalkhal County during the 2024–2025 academic year who exhibited symptoms of depression, totaling 4,137 individuals. From this population, a sample of 40 students who met the inclusion criteria was selected through convenience sampling. These participants were then randomly assigned to two groups: an experimental group (n = 20) that received the intervention and a control group (n = 20) that did not receive any treatment during the study period. The inclusion criteria included being in the specified educational levels, demonstrating depressive symptoms based on the screening tool, and providing informed consent from both the adolescent and their parent or guardian. Exclusion criteria involved any known physical or psychological condition that could interfere with the intervention process or data collection, as well as prior participation in psychotherapy or psychiatric treatment.

### 2.2. Measures

For data collection, the Pittsburgh Sleep Quality Index (PSQI), developed by Buysse et al. (1989), was used to assess sleep quality. The PSQI is a standardized and widely validated self-report questionnaire that measures various dimensions of sleep over the past month, including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. Each component yields a score from 0 to 3, and the sum of these components produces a global PSQI score ranging from 0 to 21, with higher scores indicating poorer sleep quality. The PSQI has demonstrated high reliability and validity across various populations, including adolescents, and was employed in its Persian version validated for use in Iranian samples.

In addition to sleep assessment, depressive symptoms were measured using the Beck Depression Inventory (BDI), developed by Beck in 1961. The BDI is a 21-item self-report instrument designed to assess the presence and severity of depressive symptoms in adolescents and adults. Each item is rated on a 4-point scale ranging from 0 to 3, with higher scores reflecting more severe depressive symptomatology. The total score can range from 0 to 63 and is typically interpreted in severity categories ranging from minimal to severe depression. The BDI has been widely used in clinical and non-clinical populations and shows strong psychometric properties, including high internal consistency and construct validity. The Persian version of the BDI used in this study has been standardized and validated for use in Iranian adolescents.

### 2.3. Intervention

The cognitive behavioral therapy (CBT) intervention implemented in this study consisted of eight structured sessions, each lasting approximately 70 minutes and conducted weekly over an eight-week period. In the first session, participants were introduced to one another and to

the researcher, the study objectives were explained, session schedules were established, and rules, guidelines, and the importance of attendance and active participation were emphasized. The second session focused on emotional awareness, helping adolescents recognize different types of positive and negative emotions, and understand the concept of sleep quality and quantity and their interrelation. During the third session, various forms of insomnia and their manifestations were explored. The fourth session involved identifying the physiological, cognitive, emotional, and behavioral signs of insomnia. In the fifth session, the consequences of insomnia were discussed, emphasizing the benefits of restorative sleep and introducing conflict resolution and social problem-solving techniques. The sixth session involved situational analysis of insomnia, where participants practiced problem-solving skills tailored to real-life sleep disturbances. In the seventh session, adolescents were guided to design a behavioral activity map for anticipating insomnia and were taught effective emotional expression strategies using statements such as "I feel..." to communicate their internal experiences. The final session served as a closure and reinforcement phase, where participants received symbolic rewards for their engagement, discussed the sleep management techniques they had learned, demonstrated their understanding through practical application, and reflected on strategies for maintaining the behavioral changes they had achieved.

## 2.4. Data Analysis

For statistical analysis, a one-way analysis of covariance (ANCOVA) was used to examine the effect of cognitive behavioral therapy on the dependent variables of sleep quality and sleep quantity. Pre-test scores were considered covariates to control for baseline differences, and post-test scores were used as the outcome measures. This method allowed for the evaluation of treatment effectiveness while adjusting for potential pre-intervention disparities between the experimental and control groups. Statistical significance was set at $p < 0.01$ for all analyses, and data were processed using SPSS software version 27. Assumptions for ANCOVA, including normality, homogeneity of variances, and linearity between covariates and dependent variables, were verified prior to analysis.

## 3. Findings and Results

According to the obtained results, 50% of the total student participants were male, and 50% were female. The youngest participant was 13 years old, and the oldest was 18 years old. The mean age of the students in the experimental group was 15.40 years, and in the control group, it was 15.70 years.

**Table 1**

*Mean and Standard Deviation of Sleep Quantity and Sleep Quality Variables in Pre-test and Post-test*

| Variables | Groups | Mean | Standard Deviation |
|---|---|---|---|
| Sleep Quantity (Pre) | Control | 9.40 | 2.16 |
| | Experimental | 9.35 | 2.47 |
| Sleep Quality (Pre) | Control | 33.90 | 5.31 |
| | Experimental | 36.35 | 7.71 |
| Sleep Quantity (Post) | Control | 9.70 | 2.17 |
| | Experimental | 15.00 | 2.69 |
| Sleep Quality (Post) | Control | 34.70 | 4.28 |
| | Experimental | 42.40 | 5.99 |

Given the sig value in each section, the difference in mean scores of the sleep quantity variable is statistically significant, as the sig value is less than 0.05.

**Table 2**

*ANCOVA Results for the Effect of Group Membership on Sleep Quantity*

| Variable | Sum of Squares | Degrees of Freedom | Mean Square | F | Significance Level |
|---|---|---|---|---|---|
| Pre-test Effect | 359.537 | 3 | 119.846 | 28.847 | 0.000 |
| Group Effect | 100.937 | 1 | 100.937 | 24.296 | 0.000 |

Given the sig value in each section, the difference in mean scores of the sleep quality variable is statistically significant, as the sig value is less than 0.05.

**Table 3**

*ANCOVA Results for the Effect of Group Membership on Sleep Quality*

| Variable | Sum of Squares | Degrees of Freedom | Mean Square | F | Significance Level |
|---|---|---|---|---|---|
| Pre-test Effect | 359.537 | 3 | 3332.287 | 48.084 | 0.000 |
| Group Effect | 513.390 | 1 | 513.390 | 22.224 | 0.000 |

## 4. Discussion and Conclusion

The findings of this study revealed that cognitive behavioral therapy (CBT) significantly improved both the quantity and quality of sleep in adolescents with depressive symptoms. Results from the analysis of covariance demonstrated a statistically significant difference between the experimental and control groups in the post-test phase, indicating that the CBT intervention effectively enhanced sleep-related outcomes. Adolescents in the experimental group showed notable improvements in both self-reported sleep duration and perceived sleep quality, while the control group exhibited negligible changes. These results are consistent with the theoretical foundations of CBT, which propose that modifying maladaptive thought patterns and behaviors can lead to improved emotional and physiological functioning—including better sleep regulation. Considering that sleep disturbances often accompany depressive symptomatology in adolescence, the dual focus of CBT on cognitive distortions and behavioral interventions likely played a critical role in producing these outcomes.

These findings align closely with a growing body of empirical evidence supporting the effectiveness of CBT in improving sleep outcomes among various populations, including youth. For example, Mason et al. (2023) demonstrated that internet-delivered CBT for insomnia significantly improved sleep duration and anxiety symptoms in individuals experiencing comorbid insomnia and anxiety, suggesting that CBT's effect on sleep is not limited to adult populations (Mason et al., 2023). Similarly, Lai et al. (2021) reported that CBT combined with coping strategies effectively improved sleep quality in breast cancer patients, highlighting its applicability across psychological and somatic conditions (Lai et al., 2021). In adolescents specifically, CBT may be particularly effective due to its structured and skills-based approach, which fosters autonomy, self-reflection, and emotional regulation. As

supported by Langenecker and Schreinder (2024), CBT targeting rumination was associated with reduced cross-network neural connectivity linked to depression, further emphasizing the potential neural mechanisms through which CBT may influence sleep and mood (Langenecker & Schreinder, 2024).

This study also confirms the results of research indicating the co-occurrence of sleep disturbances and depressive symptoms, and the potential for CBT to simultaneously target both domains. The work of Orri et al. (2024) provides important contextual support for these findings, as their review demonstrated the efficacy of CBT for treating both depression and anxiety in children and adolescents through mechanisms that target cognitive distortions, behavioral activation, and emotional regulation (Orri et al., 2024). Similarly, Kamalinasab et al. (2022) found that CBT significantly improved both sleep quality and cognitive functioning in women with insomnia, emphasizing the broader cognitive benefits of improved sleep regulation (Kamalinasab et al., 2022). This suggests that the improvements observed in the current study are not merely specific to sleep metrics but may also reflect broader enhancements in psychological functioning and emotional stability.

Moreover, the improvement in sleep quality and quantity observed in this study may also be attributed to the inclusion of sleep hygiene education and problem-solving skills as integral parts of the intervention. As Scott et al. (2023) noted, baseline sleep characteristics are closely linked with gains achieved through CBT, and educating individuals on the behavioral factors contributing to poor sleep may significantly enhance treatment outcomes (Scott, 2023). In a similar vein, Ibrahim et al. (2022) found that a training program in CBT significantly improved sleep quality in older adults, reinforcing the notion that education-focused components of CBT have a meaningful effect on sleep behaviors (Ibrahim et al., 2022). The inclusion of specific modules on emotional expression, conflict resolution, and

relaxation techniques in the current study likely empowered adolescents to actively engage with their sleep problems in a structured and effective manner.

The observed improvement in sleep quantity, in particular, is noteworthy given the documented challenges in modifying behavioral sleep patterns in adolescents. Many adolescents experience delayed sleep phase syndrome and irregular sleep–wake schedules due to social and academic pressures. The intervention's success in increasing sleep duration could be interpreted as a sign of the participants' improved ability to regulate bedtime routines and reduce cognitive arousal—both of which are central goals of CBT. This outcome is supported by Mariappan and Mukhtar (2024), who found that internet-based CBT significantly improved sleep quality and executive functioning in medical students, even in high-stress academic environments (Mariappan & Mukhtar, 2024). Furthermore, the structured nature of CBT may foster self-monitoring and behavioral consistency, which are crucial for establishing healthy sleep habits, especially in adolescence.

The results are also in agreement with the findings of Elham et al. (2022), who demonstrated the superiority of sleep-focused CBT over mindfulness-based and happiness-training approaches in improving emotional well-being and sleep in women with migraines (A. Elham et al., 2022). Additionally, Cojocaru et al. (2024), in a meta-analysis, found that CBT and acceptance and commitment therapy (ACT) both reduced symptoms of depression and improved sleep among patients with fibromyalgia, further reinforcing CBT's cross-diagnostic utility (Cojocaru et al., 2024). The consistency of these findings with the current study supports the broader applicability of CBT protocols for improving sleep quality across different age groups and clinical conditions.

From a developmental standpoint, adolescents are particularly vulnerable to the compounding effects of sleep deprivation and mood dysregulation. The bidirectional relationship between poor sleep and emotional disorders is well-established in the literature. Yang et al. (2022) found that computer-assisted CBT was effective in improving both sleep and psychological well-being among patients undergoing serious medical procedures, further illustrating the resilience-building potential of CBT (Yang et al., 2022). Similarly, Norian et al. (2023) showed that CBT-hypnotherapy enhanced sleep and resilience among COVID-19 treatment staff, confirming CBT's capacity to reduce stress-related sleep disturbances even in high-risk populations (Norian et al., 2023). These findings are consistent with the results of the current study, which underscore CBT's positive impact on sleep and emotional functioning in a high-stress demographic—adolescents with depressive symptoms.

## 5.    Limitations & Suggestions

Despite the promising findings, the present study is not without limitations. First, the small sample size (n = 40) and use of convenience sampling limit the generalizability of the results. Although the participants were randomly assigned to experimental and control groups, the lack of diversity in terms of geographic location and demographic variables may have introduced sampling bias. Second, the study relied exclusively on self-report questionnaires for measuring sleep quality and quantity, which are subject to reporting bias and may not capture objective physiological changes in sleep patterns. The absence of follow-up measurements also prevents conclusions about the long-term sustainability of the treatment effects. Moreover, external factors such as academic pressure, family dynamics, and technology use were not controlled, which could have influenced sleep independently of the intervention.

Future studies should consider employing larger and more diverse samples, including participants from different educational levels, socioeconomic backgrounds, and geographical regions. Incorporating objective measures of sleep—such as actigraphy or polysomnography—would enhance the accuracy and depth of the findings. In addition, longitudinal designs with follow-up assessments would allow researchers to evaluate the long-term efficacy and maintenance of CBT-induced improvements in sleep and mood. Comparing CBT with other evidence-based treatments, such as mindfulness-based cognitive therapy or pharmacological interventions, could provide a more comprehensive understanding of the most effective strategies for addressing sleep disturbances in adolescents with depression. Furthermore, investigating the mediating and moderating variables (e.g., emotion regulation, executive functioning, and family environment) would yield valuable insights into the mechanisms underlying treatment effects.

The results of this study support the integration of CBT-based interventions into school-based mental health programs targeting adolescents with sleep and mood difficulties. Practitioners and counselors working with adolescents should be trained in CBT techniques and equipped with structured intervention protocols that address

both cognitive and behavioral contributors to sleep disturbances. Schools could benefit from implementing regular psychoeducational workshops on sleep hygiene, emotion regulation, and stress management as preventive strategies. Given the accessibility and adaptability of CBT, its use could be expanded via digital platforms, including mobile applications and online group sessions, to reach broader populations with limited access to in-person therapy. Ultimately, early intervention during adolescence may prevent the escalation of sleep-related problems into chronic psychological disorders in adulthood.

## Acknowledgments

## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

## Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

## Funding

## Authors' Contributions

All authors equally contributed to this article.

## References

Arab, S., & Mohammadi, A. (2023). The Effectiveness of Cognitive-Behavioral Therapy on Sleep Disorder and Death Anxiety in the Elderly. *Aging Psychology*, *9*(1), 102-189. https://jap.razi.ac.ir/article_2585_en.html?lang=en

Cojocaru, C. M., Popa, C. O., Schenk, A., Suciu, B. A., & Szasz, S. (2024). Cognitive-behavioral therapy and acceptance and commitment therapy for anxiety and depression in patients with fibromyalgia: a systematic review and meta-analysis.

*Med Pharm Rep*, *97*(1), 26-34. https://doi.org/10.15386/mpr-2661

Ebrahimi, F., Barghi irani, Z., & Ali Akbari, M. (2023). Comparison of Cognitive-Behavioral Therapy and Acceptance and Commitment Therapy in Reducing Mood Swings, Sleep Quality and Sexual Performance in Postmenopausal Women. *Health Psychology*, *11*(44), 73-88. https://doi.org/10.30473/hpj.2023.59513.5289

Elham, A., Golparvar, M., & Sajadian, E. (2022). Comparing the effectiveness of sleep-focused cognitive behavioral therapy, mindfulness-based cognitive therapy, and Fordyce happiness training on emotional capital in women with migraines. *Feyz*, *26*(4), 446-456. https://feyz.kaums.ac.ir/browse.php?a_id=4645&sid=1&slc_lang=en

Elham, A., Golparvar, M., & Sajadian, E. (2022). Comparison of the Effectiveness of Cognitive Behavioral Therapy Focused on Sleep Improvement with Mindfulness-Based Cognitive Therapy and Fordyce's Happiness Training on the Emotional Capital of Women Suffering from Migraines. *Research Journal of Feyz*, *26*(4), 446-456. https://feyz.kaums.ac.ir/browse.php?a_id=4645&sid=1&slc_lang=en

Ibrahim, H., Abouelil, M., Ahmed, S., Khalaf, S. A., & Aly, S. E. (2022). Effect of a Training Program About Cognitive Behavioral Therapy on Sleep Quality Among the Older Person. *Egyptian Journal of Health Care*, *13*(3), 86-101. https://doi.org/10.21608/ejhc.2022.249360

Ito-Masui, A., Sakamoto, R., Matsuo, E., Kawamoto, E., Motomura, E., Tanii, H., Yu, H., Sano, A., Imai, H., & Shimaoka, M. (2023). Effect of an Internet–Delivered Cognitive Behavioral Therapy–Based Sleep Improvement App for Shift Workers at High Risk of Sleep Disorder: Single-Arm, Nonrandomized Trial. *Journal of medical Internet research*. https://doi.org/10.2196/45834

Kamalinasab, Z., Koushki, S., Bani Jamali, S. A., & Ourki, M. (2022). Comparing the effectiveness of cognitive-behavioral therapy and mindfulness on sleep quality and cognitive abilities of women with insomnia. *Quarterly Journal of Clinical Psychology Studies*, *12*(48), 1-28. https://jcps.atu.ac.ir/article_15407.html

Kiani Rad, M. (2024). Effectiveness of Cognitive Behavioral Therapy on Body Image Concern in Women with Depression Symptoms. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *3*(1), 124-138. https://doi.org/10.22034/pdmd.2024.434757.1039

Lai, H. L., Chen, C. I., Lu, C. Y., & Huang, C. Y. (2021). Cognitive Behavioral Therapy plus Coping Management for Depression and Anxiety on Improving Sleep Quality and Health for Patients with Breast Cancer. *Brain Sciences*, *11*(12), 1614. https://doi.org/10.3390/brainsci11121614

Langenecker, S., & Schreinder, M. (2024). Rumination-focused cognitive behavioral therapy reduces rumination and targeted cross-network connectivity in youth with history of depression: replication in preregistered randomized clinical trial. *Biological Psychiatry Global*, *4*(1), 1-10. https://doi.org/10.1016/j.bpsgos.2023.08.012

Mariappan, V., & Mukhtar, F. (2024). Effects of Internet Cognitive Behavioral Therapy for Insomnia and Internet Sleep Hygiene Education on Sleep Quality and Executive Function Among Medical Students in Malaysia: Protocol for a Randomized Controlled Trial. *Jmir Research Protocols*, *13*(1), e59288. https://doi.org/10.2196/59288

Mason, E. C., Grierson, A. B., Sie, A., Sharrock, M. J., Li, I., Chen, A. Z., & Newby, J. M. (2023). Co-occurring insomnia and anxiety: a randomized controlled trial of internet cognitive

behavioral therapy for insomnia versus internet cognitive behavioral therapy for anxiety. *Sleep*, *46*(2), zsac205. https://doi.org/10.1093/sleep/zsac205

Norian, F., Rasouli, N., & Fathi, M. (2023). The Effectiveness of Cognitive Behavioral Hypnotherapy on Self-efficacy, Resilience, Mental Health and Sleep Disorders of Treatment Staff Involved in the Care of Patients with COVID-19: A Semi-Experimental Study. *Journal of Critical Care Nursing*, *16*(1). https://doi.org/10.61186/iau.34.3.324

Orri, S., Gudmundur, S., & Eric, A. S. (2024). Cognitive Behavioral Therapy for Anxiety and Depression in Children and Adolescents. *Review article*, *47*(2), 311-323. https://doi.org/10.1016/j.psc.2024.02.002

Rahmani, M., Namvar, H., & Hashemi Razini, H. (2024). The Effectiveness of Rational Emotive Behavior Therapy on Executive Functions and Academic Procrastination of Children with Sluggish Cognitive Tempo. *Journal of Psychological Dynamics in Mood Disorders (PDMD)*, *2*(4), 82-90. https://doi.org/10.22034/pdmd.2024.434756.1038

Ramfjord, L. S., Faaland, P., Scott, J., Saksvik, S. B., Lydersen, S., Vedaa, Ø., Kahn, N., Langsrud, K., Stiles, T. C., Ritterband, L. M., Harvey, A. G., Sivertsen, B., & Kallestad, H. (2023). Digital Cognitive Behaviour Therapy for Insomnia in Individuals With Self-reported Insomnia and Chronic Fatigue: A Secondary Analysis of a Large Scale Randomized Controlled Trial. *Journal of Sleep Research*, *32*(5). https://doi.org/10.1111/jsr.13888

Roghani, F., Jadidi, M., & Peymani, J. (2022). The Effectiveness of Floortime Play Therapy on Improving Executive Functions and Cognitive Emotion Regulation in Children with Attention Deficit / Hyperactivity Disorder (ADHD). *International Journal of Education and Cognitive Sciences*, *2*(4), 30-44. https://doi.org/10.22034/injoeas.2022.160686

Scott, H., Cheung, Janet M. Y, Muench, Alexandria, Ivers, Hans, Grandner, Michael A, Morin, Charles M, Perlis, Michael L. (2023). Baseline sleep characteristics are associated with gains in sleep duration after cognitive behavioral therapy for insomnia. *Sleep Medicine*, *102*, 199-204. https://doi.org/10.1016/j.sleep.2023.01.009

Shabannezhad, A. (2024). Comparison of Cognitive Behavioral Therapy and Mindfulness on Anxiety, and Positive and Negative Affect in Female Students. *Journal of Adolescent and Youth Psychological Studies (JAYPS)*, *5*(1), 133-141. https://doi.org/10.61838/kman.jayps.5.1.16

Yang, Y., Zhang, H., Li, Y., Liu, Z., Liu, S., Li, X., Fan, G., Xu, Y., & Wang, B.-q. (2022). The effectiveness of computer-assisted Cognitive Behavioral Therapy (cCBT) for psychological outcomes in patients with laryngectomy: Randomized controlled trial. *Journal of affective disorders*, *300*, 59-65. https://www.sciencedirect.com/science/article/pii/S0165032721014002

Zolrahim, R., Nasiri Souma, A., Ali Asgari, R., & Asghari Varghan, Z. (2024). Investigating the Impact of Cognitive Behavioral Therapy on Depression and Anxiety in Patients with Type 2 Diabetes.