



Literature Review

COGNITIVE BEHAVIOR THERAPY EFFECTS IN PATIENTS WITH INSOMNIA: A LITERATURE REVIEW

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ABSTRACT

Introduction: Insomnia is a sleep disorder that is often complained by adults. The impacts of insomnia have been widely reported to decrease productivities, less involvement in social activities, and decline mental health status. Interventions to main quality and quantity of sleep among adults emphasized the benefits of cognitive behavioral therapy (CBT). Nevertheless, the implementations and effects of this particular therapy among adults seems inconsistent. Therefore, this study aims to determine the effect of cognitive behavioral therapy on insomniacs.

Method: A literature review with article searches conducted on the PubMed, SpringerLink, ScienceDirect, and Google Scholar databases was applied, The keywords Cognitive Behavioral Therapy (AND) Insomnia, in articles published in 2018-2021. After went through the selection process, the authors received 10 articles, 6 articles used the Randomized Control Trial method, 1 Case Series Study article, 2 pre-experimental articles, 1 Single-Arm Pilot Trial article.

Results: The following characteristics of cognitive behavioral therapy was reported to positively impacts of adults with insomnia. The interventions significantly reduced level of insomnia of adults age 26- to 35-year-old, the given intervention was delivered for a minimum 45 minutes to a maximum 60-minutes, and the length of the program delivered was one to three months. Cognitive behavioral therapy is significant for reducing insomnia.

Conclusions: This review on people with insomnia treated by CBT underlined the impact of intervention on the targeted outcomes. The findings may have led to greater benefits and that the targeted population had access to high quality of sleep care. Evidence from this review suggested a comprehensive sleep management will likely lead to further improvements, as will continue support and implementation beyond the end of the program. A critical need to develop methodologically comprehensive trials with a larger sample size and long follow-up periods which rigorously evaluate the efficacy of CBT interventions associated with sleep are required.

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1. INTRODUCTION

Insomnia is a phenomenon that often occurs in life. Over time, insomnia has become a regular thing in a society with a busy schedule that

exceeds the time limit for rest. The human body itself needs rest, one of which is sleep, because sleep is a form of rest that can make the human body healthy and fresh (Koimah, 2019). Insomnia will cause physical, emotional, and

cognitive growth disorders and disrupts the patient's social environment (Nurdin, Arsin, & Thaha, 2018). Untreated insomnia has two short-term effects: stress, difficulty concentrating and being lethargic throughout the day. On the other hand, the long-term effect can be mild depression, which leads to the risk of heart disease and diabetic (Moningka, 2020).

Globally, it was about 30% of the world's population experienced chronic insomnia and 10% of them reported chronic insomnia (Zahara, 2018) while in Indonesian it is estimated of 10% or 23 million Indonesians (Zahara, 2018). Additionally, Ardiatama (2021) underlined that among adult population, the prevalence of insomnia was ranging from 10 to 15%. Insomnia is common in a group of middle-aged and older adults (Chigome, Nhira, & Meyer, 2018).

Insomnia is sleep disorder that related to the reticular activating system (RAS) and the Hypothalamus (Ardiatama, 2021). RAS has a role in to main the body awake (Nurdin, Arsin, & Thaha, 2018). Several stimulations on visual, auditory, tactile, pain, emotional, and thought processes will activate the RAS to secrete catecholamine hormones and resulted awakening (Moningka, 2020). Those stimulations released of serotonin from specialized cells of the sleep system called raphe nuclei is obtained from the pons and medulla so that this system produces sleep (Putri, 2020). Likewise, impulses such as thoughts, disturbing lighting stimuli, and emotions, these will also cause a person to stay awake, resulting in difficulty sleeping and can make someone experience insomnia (Widyawati, 2022).

This insomnia does not appear suddenly, but other factors cause it, such as psychological disorders, depression, migraines, or even bad habits (Zahara, 2018). Due to several external factors that are one of the clinical diagnoses for insomnia, nursing problems arise from a sleep disorder. Nurses can use interventions to overcome this problem, including sleep support and activity/rest education (Tim Pokja SDKI DPP PPNI, 2016). Both of these interventions can be done in the form of Cognitive Behavior Therapy (CBT). CBT is used to fix bad behavior and thought patterns to produce better behavior than before (Moningka, 2020). CBT in therapy helps overcome destructive thought patterns in the atmosphere around the neighborhood because this wrong mindset can affect a person's emotional atmosphere and actions.

Previous studies investigated the effects of CBT among group of people with insomnia

were varied. Schiller, Soderstrom, Lekander, Rajaleid, & Kecklund, (2018), on 51 office, shop, warehouse, and logistics employees who experienced insomnia, showed that CBT effectively reduced insomnia. Neverteheles, Putri (2020) found that incomparison to CBT, another factor such as sleep hygiene give more impact to the quality of sleep. Based on the measurement results, there was a decrease in insomnia after the CBT delivered. Therefore, based on the most recent data on the effect of CBT on insomina, the authors interested to conduct literature review on the effect of CBT on insomniacs.

2. METHODS

Overall summary in the form of a literature review that reaches efforts to reduce insomnia through cognitive behavioral therapy. The protocol and evaluation used in this literature review use a flow chart as a determinant of the completion of the study that has been found by the authors and is adjusted to the objectives of the literature review.

The search for several journal articles in this literature review was carried out in April 2022. The data obtained was in the form of the academic data base; Pubmed, Springerlink, ScienceDirect, and Google scholar. Data was obtained in the form of journal articles in the category of international journal articles, published in English, and national journal articles written in Bahasa Indonesia.

The following keywords were applied; Boolean operator (AND) to focus, expand, or sort articles in the databases with the keyword cognitive behavioral therapy (AND) insomnia. A total of 29,842 articles was retrieved. Then proceed with selecting the suitability of the article with the inclusion and exclusion criteria set by the author in the database used. From the selection results, 29,825 articles were excluded because they did not meet the criteria. After that sorting the duplicate articles. After making sure that there are no duplicate articles, the author continues with a critical appraisal to see the quality of the journal articles. Journal articles that pass the critical appraisal by the authors are designated as articles that will be used as review material. After all, stages are completed, 10 articles are found that are ready to be reviewed.

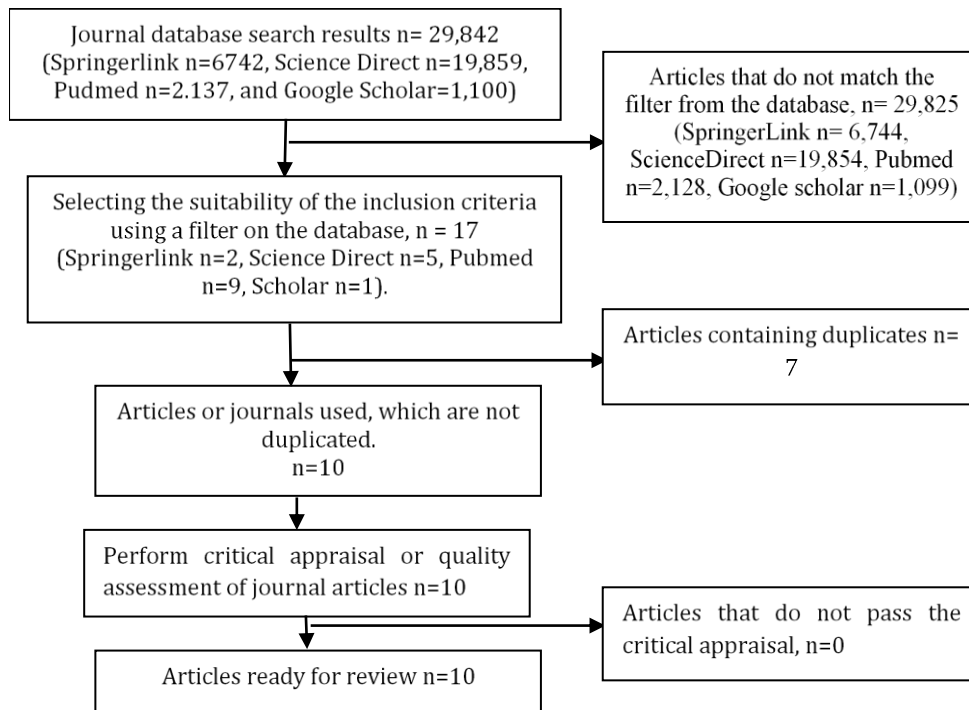


Figure 1. Study Selection Flow

Methodological quality was carried out in each study using the Joanna Briggs Institute (JBI). Critical appraisal included the Randomized control trial design, Quasi-Experimental, and Diagnostic Test Accuracy Studies. This list of assessments will be given a value of yes, no, unclear, or not applicable to each criterion with a value of yes then one point is given and the other value is zero, then all scores of studies that have been assessed are added up. Articles or journals are declared qualified when the results in their assessment show a yes answer with a minimum of more than 70% of the total number of questions.

3. RESULTS

The characteristics of the study articles which explain the research design, assessment instruments, age, gender, and duration of the implementation of cognitive behavioral therapy are listed in table 1. The distribution of the implementation of cognitive behavioral therapy is listed in table 2. Distribution before and after cognitive behavioral therapy is listed in table 3. The distribution of the influence of cognitive behavioral therapy is listed in table 4.

4. DISCUSSION

The purpose of this comprehensive review was to determine the effect of cognitive behavior

therapy effects in patients with insomnia. Results of the review revealed that the interventions significantly reduced level of insomnia of adults age 26- to 35-year-old, the given intervention was delivered for a minimum 45 minutes to a maximum 60-minutes, and the length of the program delivered was one to three months. Cognitive behavioral therapy is significant for reducing insomnia. However, no specific outcomes were observed in the level of insomnia after the program completed. This lack of findings may be attributed to brain functions. Consequently, further large-scale RCTs measuring insomnia and the brain function are required to more comprehensively understand the brain functions and insomnia. Overall, this review adds to the existing evidence that cognitive behavior therapy effectively alleviates insomnia and improves quality of sleep.

The instrument used to measure the quality of sleep covered cognitive behavioral therapy for insomnia measurement. The insomnia severity index (ISI) was the most common instrument used by researchers. According to the explanation by Mamun et al., (2022), the Insomnia Severity Index is an instrument that is used and extensively validated to screen for insomnia and to assess the severity of insomnia worldwide. Another instruments was to measure sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, and daytime

Table 1. Characteristic of study articles

Category	Percentage (%)
Research design	
<i>Randomized Control Trial</i>	70
<i>A Case Series Study</i>	10
<i>Pra-Eksperimental</i>	10
<i>A Single-Arm Pilot Trial</i>	10
Assessment Instrument	
Insomnia Severity Index	20
Insomnia Severity Index + Sleep Onset Latency + Total Sleep Duration + Sleep Hygiene	10
Insomnia Severity Index + Target Wake Time + Sleep Diary	10
Insomnia Severity Index + Week Diary	10
Insomnia Severity Index + Adolescent Sleep Hygiene Scale	10
Insomnia Severity Index + Pittsburgh Sleep Quality Index	20
Insomnia Severity Index + Sleep Efficiency + Sleep Latency + Wake After Sleep Onset + Total Sleep Time	10
<i>Insomnia Severity Index + Sleep Diary</i>	10
Age	
Early adolescence (17-25 years)	30
Early adulthood (26-35 years)	40
Late adulthood (40 years)	10
Late old age (60-64 years)	20
Gender	
Man	
1-20	3.0
21-40	6.9
41-60	5.3
> 60	19.3
Woman	
9-30	10.2
31-60	4.1
60-90	27.3
> 90	23.4

Table 2. Distribution of cognitive behavioral therapy

Category	Percentage (%)
Duration of CBT Implementation Per Session	
45-60 minutes	
60-90 minutes	30
90 minutes	30
Not explained	20
	20
Execution duration	
< 1 month	10
1-3 months	60
4-6 months	20
> 6 months	10

dysfunction (Wulan, Ketut, & Widyadharma, 2019).

Concerning age of adults with insomnia, of the 10 articles reviewed showing that the age that often experiences insomnia is early adulthood (26-35 years), this data is by Ardiatama, (2021) statement that various studies have noted insomnia as a fairly common condition experienced by the adult population,

with prevalence ranges from 10-15% among the general population. Logical explanations related to this phenomenon was physical activity as productive age and psychological adaptations to those productives (Mamun et., 2022). Accordingly, higher rates of occurrence of insomnia in adults have been noted among divorced, elderly, women, and currently experiencing medical problems or health

Table 3. Distribution of insomnia levels before and after intervention

No.	Author	Measurement results (mean±SD)			
		Before intervention		After intervention	
		Control group	Intervention group	Control group	Intervention group
1.	Hapsari & Kurniawan, (2019)	Not explained	19.6±2.1	Not explained	16.6±1.5
2.	Schiller, Soderstrom, Lekander, Rajaleid, & Kecklund, (2018)	16.42±4.4	16.04±3.9	16.69±4.8	13.58 ±6.0
3.	Egbegi, Bella-Awusah, Omigbodun, & Ani, (2021)	13.25±2.23	18.29±1.22	11.29±2.10	6.76±1.81
4.	Siengsukon, Alshehri, Williams, Drerup, & Lync, (2020)	Not listed	18.1±4.0	Not listed	13.8±5.8
5.	Jarnefelt et al., (2020)	Not listed	13.04±5.7	Not listed	10.5±4.2
6.	Manber et al., (2019)	15.9±4.4	15.4±4.3	11.2±4.9	8.0±5.2
7.	Hwang, Nam, & Lee, (2019)	18.5±0.5	17.7±0.5	17.7±0.6	11.4±0.6
8.	Law et al., (2018)	Not listed	16.9±5.2	Not listed	9.5± 6.2
9.	Castronovo, Galbiati, Sforza, Poletti, Giarolli, Kuo, Zucconi, Manconi, Hensley, Morin, & Ferini-Strambi, (2018)	Not listed	17.15±4.51	Not listed	9.68±4.57
10.	Chao et al., (2021)	Not listed	21.0±5.0	Not listed	11.0±7.0

Table 4. Distribution of the effect of cognitive behavioral therapy

Author	Result of Statistical	Interpretation
Hapsari & Kurniawan, (2019)	$\rho=0.036$	<i>Cognitive behavioral therapy is significant for reducing insomnia.</i>
Schiller, Soderstrom, Lekander, Rajaleid, & Kecklund, (2018)	$\rho=0.045$	
Egbegi, Bella-Awusah, Omigbodun, & Ani, (2021)	$\rho=0.03$	
Siengsukon, Alshehri, Williams, Drerup, & Lync, (2020)	$\rho=0.026$	
Jarnefelt et al., (2020)	$\rho=0.022$	
Manber et al., (2019)	$\rho=0.001$	
Hwang, Nam, & Lee, (2019)	$\rho=0.001$	
Law et al., (2018)	$\rho=0.001$	
Castronovo, Galbiati, Sforza, Poletti, Giarolli, Kuo, Zucconi, Manconi, Hensley, Morin, & Ferini-Strambi, (2018)	$\rho=0.031$	
Chao et al., (2021)	$\rho=0.001$	

problems. Nevertheless, less data was found in the published papers on whether adults with insomnia were experiencing the problems mentioned.

The gender of the 10 articles reviewed by the authors, most of them were women with a result of 498 (65%) than men who were only 265 (35%). occurs in women than men. This is indirectly due to hormonal factors, namely when

a person experiences a psychological condition and feels anxious, or nervous, or when emotions cannot be controlled, it can cause the hormone estrogen to decrease, this can be a factor in increasing sleep disorders. The tendency of risk of developing insomnia in women also increases with age.

The CBT sessions reviewed by the authors were mostly conducted for 45-90 minutes and

the duration of the implementation was mostly 1-3 months. These data are by the explanation of Carney et al., (2017) that CBT sessions are carried out on average in 60 minutes with a duration of 8 weeks. Alimoradi, Ohayon, & Brostrom, (2022) also explained that cognitive behavioral therapy is specifically designed to treat insomnia which is recommended as the first early treatment. The main benefit of CBT- is proving superior long-term effects to individuals taking sleeping pills that only support the user in the short term. CBT-I is effective in reducing depression, anxiety, and chronic pain, and improving sleep-related quality of life.

The results of the decrease in insomnia scores after being given cognitive behavioral therapy, as seen in the data above, the majority of respondents before the intervention experienced moderate insomnia with a score of 13-21 and after the intervention, the majority of respondents were in mild insomnia with a score of 6-13.8 and 1 article remained at moderate insomnia level with score 16.6. Dieperin et al. (2020) explained that a higher score indicates greater severity of insomnia.

CBT positively improve sleep continuity and sleep efficiency, achieved by reducing sleep latency and time spent awake after sleep initiation. The sleep improvement achieved with CBT-I is well maintained over time (Meizayani, 2021). Hapsari & Kurniawan (2019) explained that CBT is effective for overcoming insomnia because it is a combination of two therapies, namely cognitively and behaviorally where the treatment requires direct intervention to correct behavior, wrong thinking patterns, or the relationship between the two which can worsen the condition of insomniacs.

Nevertheless, this review had some limitations. First, the heterogeneity of the baseline characteristics, such as male to female ratio and lack of data on type of insomnia; mild, moderate and severe were not analyzed. Second, the measurement of brain function associated with insomnia was lack which could not represent detail information of a brain function of people with insomnia. Lastly, most studies included in this review only reported results based on short follow-up periods (three to 12 months) which limited analyses of long-term effects.

5. CONCLUSION

This review on people with insomnia treated by CBT underlined the impact of intervention on the targeted outcomes. Group of early adults was reported as the

major population who reported insomnia, the treatment given was relatively short to less an hour with in the maximum of three months. Those may have led to greater benefits and that the targeted population had access to high quality of sleep. Evidence from this review suggested a comprehensive sleep management will likely lead to further improvements, as will continue support and implementation beyond the end of the program. A critical need to develop methodologically comprehensive trials with a larger sample size and long follow-up periods which rigorously evaluate the efficacy of CBT interventions associated with sleep are required.

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