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THE EFFECTIVENESS OF SLEEP HYGIENE ON SLEEP QUALITY IN CANCER PATIENTS UNDERGOING CHEMOTHERAPY: A LITERATURE REVIEW

Authors:

Vovi Meidas Setia[1], Elsye Maria Rosa[2]

[1] Master of Nursing student of the University of Muhammadiyah Yogyakarta, Tamantirto Poor Bantul, Yogyakarta, Indonesia.
[2]Department of Surgical Medical Nursing, Master of Nursing, University of Muhammadiyah Yogyakarta, Tamantirto Poor Bantul, Yogyakarta, Indonesia
*Corresponding Email: *elsye@umy.ac.id*

About The Author

1. 1st Author : Vovi Meidas Setia, S.Kep, Ns.
   Affiliation : Master of Nursing Student, University of Muhammadiyah Yogyakarta
   Mailing Address : Jalan Shirotol, RT.2/RW.5, Tamantirto, Bantul, Yogyakarta.
   Email of author : meidassetiavovi@gmail.com
   Orcid ID : https://orcid.org/0009-0009-0749-6188
   Google Scholar URL : Q3R4esAAAAJ&hl
   Phone Number : +628 5367344081

   2nd Author : Dr. Elsye Maria Rosa.,SKM., M.Kep
   Affiliation : Department Master of Nursing, University of Muhammadiyah Yogyakarta Tamantirto Poor Bantul, Yogyakarta, Indonesia
   Mailing Address : South Ring, Tamantirto Kasihan Bantul Yogyakarta
   Email of author : *elsye@umy.ac.id*
   Orcid ID : https://orcid.org/0000-0003-2405-0953
   Google Scholar URL : vWG1SlsAAAAJ&hl
   Phone number number : +628112699241

ABSTRACT

Cancer occurs due to impaired function of Deoxyribonucleic Acid (DNA) which can significantly increase cell growth to cell proliferation within cells. The study purposed to provide information on effective sleep hygiene therapy on the

sleep quality of cancer patients undergoing chemotherapy. The study was designed with PRISMA database using Google Scholar, PubMed, ScienceDirect, ProQuest and Scopus data focuses on the last five years, from 2018 to 2023. The data was selected by referring to the "Mendeley and Rayyan" application independently to filter from the screening, the results were selected by activating the blind Rayyan mode. The literature is an option to be able to identify sleep hygiene therapy trials given to cancer patients who experience sleep quality problems. The JBI is a critical assessment tool used to determine the quality of journals. The results of the article showed significant results to treat cancer patients who have poor sleep quality and beneficial for fatigue. Based on the review, it could be concluded that sleep hygiene interventions have a positive value on sleep quality and severity of cancer patients undergoing chemotherapy

Keywords: cancer, sleep hygiene, sleep quality, chemotherapy

ABSTRAK

Kanker terjadi karena gangguan fungsi Asam Deoksiribonukleat (DNA) yang secara signifikan dapat meningkatkan pertumbuhan sel hingga proliferasi sel di dalam sel. Tujuan dari penelitian ini adalah untuk memberikan informasi tentang terapi kebersihan tidur yang efektif pada kualitas tidur pasien kanker yang menjalani kemoterapi. Metode penelitian menggunakan database PRISMA menggunakan data Google Scholar, PubMed, ScienceDirect, ProQuest dan Scopus berfokus pada lima tahun terakhir, dari tahun 2018 hingga 2023. Data tersebut dipilih dengan mengacu pada aplikasi "Mendeley and Rayyan" secara mandiri untuk menyaring dari screening, hasilnya diseleksi dengan mengaktifkan mode blind rayyan agar dapat dipilih bersama. Literatur tersebut menjadi pilihan untuk dapat mengidentifikasi uji coba terapi kebersihan tidur yang diberikan kepada pasien kanker yang mengalami masalah kualitas tidur. JBI adalah alat penilaian kritis yang digunakan untuk menentukan kualitas jurnal. Hasil artikel yang dikaji menunjukkan hasil yang signifikan dan dapat diberikan kepada pasien kanker yang memiliki kualitas tidur yang buruk dan juga bermanfaat untuk kelelahan. Kesimpulan berdasarkan hasil review intervensi sleep hygiene memiliki nilai positif terhadap kualitas tidur dan tingkat keparahan pasien kanker yang menjalani kemoterapi.

Kata kunci: Kanker, sleep hygiene, perawatan kesehatan, kemoterapi

INTRODUCTION

Cancer is one of the 10 leading causes of death worldwide. The National Cancer Institute defines cancer as the abnormal growth of new cells that grow beyond normal limits. Cancer is a disease caused by the abnormal and uncontrolled growth of cells that occurs on a continuous basis. Cancer is caused by a disruption in the function of deoxyribonucleic acid (DNA), which can significantly increase cell growth and lead to cell proliferation. Cancer develops as a result of physical conditions and unhealthy lifestyles. It then invades parts of the body and spreads to other organs. As cancer develops, tumor heterogeneity also increases, with different types of cells being produced (Pucci et al., 2019). In 2012, cancer caused approximately 8.2 deaths. According to the International Agency for Research on Cancer (IARC), the number of cancer cases reported in 2012 was 14,067,894, and the most recent data shows that there were 8,201,575 cancer deaths worldwide, and the World Health Organization estimates that the number of cancer patients worldwide will increase to approximately 18.1 million new cases, and based on the number of cases, 9.6 million cancer patients will die in 2018 (Widyastuti et al., 2019).

There are numerous cancer therapies administered to cancer patients, namely surgery, radiation, chemotherapy, hormone therapy and immunotherapy. Chemotherapy is often used for systemic cancer and clinical or subclinical metastases. Chemotherapy is a type of cancer treatment that uses

chemicals or drugs in the form of pills or infusions. The aim of chemotherapy is to inhibit the spread of cancer cells and prevent cancer cells from growing back (Bukowski et al., 2020). Chemotherapy has side effects, one of which is functional decline, including reduced sleep quality. Sleep quality disorders or insomnia is a sleep problems or difficulty sleeping and sleep patterns caused by cancer undergoing chemotherapy. Various factors, including inflammatory activity in the body, become disrupted, giving side effect to the patients undergoing chemotherapy. (Anggraini et al., 2020)

The effects of chemotherapy need to be managed with pharmacotherapy, i.e. with chemical drugs that have side effects, and also with non-pharmacotherapy if this therapy has no bad side effects, i.e. with complementary or alternative therapy, i.e. (yoga, massage, aromatherapy and sleep hygiene) Sleep hygiene is also part of CBT, which involves non-pharmacotherapy that can improve sleep quality for sleep comfort, including environmental and individual factors. CBT-I can be administered over a period of 6 to 10 weeks for approximately 6 sessions. This method consists of: relaxation training, sleep hygiene, cognitive therapy, stimulus control therapy and sleep restriction therapy (Inayati, 2022).

The effects of chemotherapy need to be treated with pharmacological treatment that can be given with chemical drugs with side effects and non-pharmacological therapy without bad side effects (for example, complementary therapy or alternative therapy (yoga, massage, aromatherapy and sleep hygiene). Sleep hygiene is also part of cognitive-behavioral therapy, which is a non-pharmacological therapy that can regulate better sleep quality for sleep comfort including environmental and personal. CBT-I can be given over a period of 6 to 10 weeks for approximately 6 sessions. This method consists of several namely: relaxation training, sleep hygiene, cognitive therapy, stimulus control therapy and sleep restriction therapy.

According to the results of Melton's research (2018), CBT-I techniques in the field of sleep cancer Perform stimulus control to regulate sleep, sleep hygiene, which has factors that affect the therapy. the results of the study explain that cognitive-behavioral therapy, which is related to sleep hygiene, has a positive effect on sleep quality and fatigue levels in patients receiving chemotherapy protocols. It is also in line with Shareh et al., (2022) where cognitive-behavioral therapy with sleep hygiene methods has a significant effect on patients who experience sleep disorders in hemodialysis patients, but this supporting research was conducted in patients with chronic kidney disease (CKD). One of the reviews of cognitive behavioral interventions for insomnia, this review examined the effectiveness of interventions for cancer patients with insomnia, where insomnia is a sleep quality disorder (Garland et al., 2014).

Based on the previous systematic review, this article is expected to add to the discussion about sleep hygiene and contribute an updated theoretical significance of sleep hygiene review on sleep quality of cancer patients. Therefore, it is important to systematically review the effectiveness of sleep hygiene in cancer patients undergoing chemotherapy. The effectiveness of sleep hygiene on sleep quality in cancer patients receiving chemotherapy was investigated using a literature review approach.

METHOD

The study employed a comprehensive literature review was conducted. The stages of the review process include formulating responses to the research questions, assessing the quality of the studies included in the article, evaluating the article as a whole, summarizing the research results, and

interpreting the results presented in the journal's bibliography. In each of these stages, the focus of the research question is "The Effectiveness of Sleep Hygiene on the Sleep Quality of Cancer Patients Undergoing Chemotherapy?". This approach is aligned with the overarching objective of the research.

Data Sources and Search Strategies

The data was obtained from several databases such as PubMed, Scopus, PROQUEST, Science Direct and Google Scholar from 2018 to December 2023. Numerous keywords were applied to select relevant journals, such as (*Sleep Hygiene) OR (Sunnah of Sleep) OR (Cognitive Behavioral Therapy) AND (Sleep Quality) AND (Cancer) AND (Chemotherapy)* without using *Boolean "NOT'*. The strategy in selecting relevant articles employed English filters, open access and full text, participants or populations of cancer *intervention Sleep Hygiene Outcomes Sleep Quality*. The strategy for selecting high-quality articles applied two criteria, namely open access, original and full text inclusion, cancer intervention, participants or populations *Sleep Hygiene Outcomes Sleep Quality*. Meanwhile, the exception criteria are Access Permission, Submission of non-original Publications to Editors, Abstracts Only, Articles and Books Reviewed.

Table 1.
The Keywords of Searching Literature

Database	Search Statement	Result
Google Scholar	**Technique 1: No Limiters** Effectiveness OR Influence AND Sleep Hygiene OR Sunnah of Sleep OR Cognitive Behavioral Therapy AND Sleep Quality AND Cancer AND Chemotherapy	4.620
	Technique 2: With Limiters: Year of publication, Article Effectiveness OR Influence AND Sleep Hygiene OR Sunnah of Sleep OR Cognitive Behavioral Therapy AND Sleep Quality AND Cancer AND Chemotherapy	639
	Filters: from 2018-2023, English-language articles, non-book intervention journals, medical limits, sleep and patients, journals focused on Randomized Control Trail (RCT) and Quasi-Experimental	
PubMed	**Technique 1: Using MESH without limiters** (((((sleep hygiene) OR (Cognitive behavioral therapy)) AND (sleep quality)) AND (cancer)) AND (Chemotherapy**)**	52
	Technique 2: Using MESH with limiters: text availability, article type, year of publication and language. (((((sleep hygiene) OR (Cognitive behavioral therapy)) AND (sleep quality)) AND (Cancer)) AND (Chemotherapy**)** **Filters:** Full text, English and 2018-2023.	16
ProQuest	**Technique 1: No Limiters** Sleep Hygiene OR sunnah of sleep OR cognitive behavioral therapy AND sleep quality AND Cancer AND Chemotherapy	114,53 337

	Technique 2: With Limiters: text availability, source type, year of publication, subject, document type, language and nursing research. Sleep Hygiene OR sunnah of sleep OR cognitive behavioral therapy AND sleep quality AND Cancer AND Chemotherapy **Filters:** Full text, scholarly journal, from 2018-2023, sleep and patients, acticle, english, international journals, reserch and public health.	
ScienceDirect	**Technique 1: No Limiters** "Sleep Hygiene" OR "sunnah of sleep" OR "cognitive behavioral therapy" AND "sleep quality" AND Cancer" AND Chemotherapy" **Technique 2: With Limiters: Publication year, article type, language, access that can be opened in the cover area** "Sleep Hygiene" OR "sunnah of sleep" OR "cognitive behavioral therapy" AND "sleep quality" AND cancer "AND Chemotherapy" **Filters:** from 2018-2023, research articles, English, subject area, open access	8. 298 reviews 1.780
Scopus	**Technique 1: No Limiters** "Sleep Hygiene" AND "Cognitive Behavioral Therapy" AND cancer AND "Chemotherapy" **Technique 2: With Limiters: Year of publication, document type, and Language.** "Sleep Hygiene" AND "Cognitive Behavioral Therapy" AND cancer"AND "Chemotherapy" **Filters:**from 2018-2023, articles, English. medical limit, article limit,	125 125

Data review and data images

Firstly, the researcher created a logical grid using PICOS to select keywords in accordance with the predetermined inclusion criteria. PICOS is an acronym that stands for Population, Intervention, Comparison, Outcome and Study Design. Subsequently, the selected keywords were entered into the search engine, namely: P (problem or population): cancer patients undergoing chemotherapy; I (Intervention): The comparison group was defined as patients undergoing chemotherapy who received sleep hygiene/cognitive behavioral therapy. The control group received usual care or another intervention for cancer patients undergoing chemotherapy, while the experimental group received sleep hygiene/cognitive behavioral therapy before and after the intervention. The outcome was assessed using the Pittsburgh Sleep Quality Index (PSQI), and the research design was a randomized controlled trial (RCT).

The data were selected independently using Mendeley and Rayyan to apply a filter, and subsequently, the blind mode of Rayyan was activated so that all results could be selected collectively. Following this, verification was carried out by re-activating the blind mode in Rayyan for each search result in question. If there is a divergence of opinion, it is possible to reach a consensus through constructive debate and discussion. The next step involves entering each

document folder corresponding to the database and eliminating any duplicate files that may be found. The journals that are eligible for transfer to Mendeley will be placed in a document designated as "potential" following the selection and filtering of titles and abstracts. The articles in the "potential" folder will be reviewed by researchers by selecting the full-text option. The accessible articles will be placed in a folder named "include for review." In addition, the data is reviewed manually by reviewers based on each journal that meets the predetermined requirements. The data exhibits multiple characteristics of the study, namely (year of publication, research design, control group, hypertension group) as well as participant characteristics (sample size, number of respondents), and the length of administration, intervention programmed (duration) and result are observed in the next stage.

Data Synthesis

The objective of the activity was to synthesize data from systematic sleep hygiene outcomes from several relevant studies with review questions. The researchers described the results of studies on sleep hygiene interventions for cancer patients undergoing chemotherapy. It was demonstrated that sleep hygiene was described in all reviews, with the following criteria: type of cancer, timing of intervention, duration of administration, number of respondents, and study design used.

The efficacy of sleep hygiene interventions for improving sleep quality in cancer patients undergoing chemotherapy was evaluated based on the results of a review of the literature. The review identified several administration durations and combinations of interventions for sleep hygiene.

Evaluating Quality

The following stage involves a comprehensive review of selected articles with a view to determining the quality of the research article. This will enable an evaluation to be made as to the relevance, potential for bias, reliability and overall quality of the research employed. The Joanna Briggs Institute for Critical Appraisal of RCT has developed a 13-question control and quasi-experimental study, comprising nine questions. The assessment is tailored to the design studies used in this article, namely those of (Barker et al., 2023). The critical assessment tool will be applied to each study conducted by the reviewer, with the following ratings assigned: "yes," "no," "unclear," or "not applicable." The total score is calculated as the percentage of "yes" answers in the results of a critical assessment using the JBI, where: A score of 80% or above is classified as high, a score of 60-70% is classified as moderate, and a score of less than 60% is classified as low (Luh et al., 2022). In all instances where a decision needs to be made, there will be a disagreement. The JBI is employed to assess bias in the included articles.

RESULT

Selection Studies

A total of 2,897 journals were selected from five major database sources, which were classified into the following categories: PubMed: 16 articles, Scopus: 125 articles, ScienceDirect: 1,780 articles, Google Scholar: 639 articles and ProQuest: A total of 337 articles were identified based on predetermined keywords. The results of the duplicate filtering process yielded 510 articles. Subsequently, the next data set obtained from the filtering results corresponded with the title and abstract of a number of results, namely 2,387. However, the title filtering process identified published articles that did not align with the specified research topic, necessitating their removal.

The article in question was subsequently deleted. This implies that the selected articles align with the specified requirements. A total of 27 journals were retrieved, and 11 journals were excluded due to the inclusion of irrelevant interventions and samples. The remaining 16 journals were subjected to further analysis, and the full texts of nine journals were read to ascertain their eligibility based on the prism issuance (Figure 1). This implies that only seven studies were ultimately selected for review in accordance with the established inclusion criteria.

Quality of Evaluation

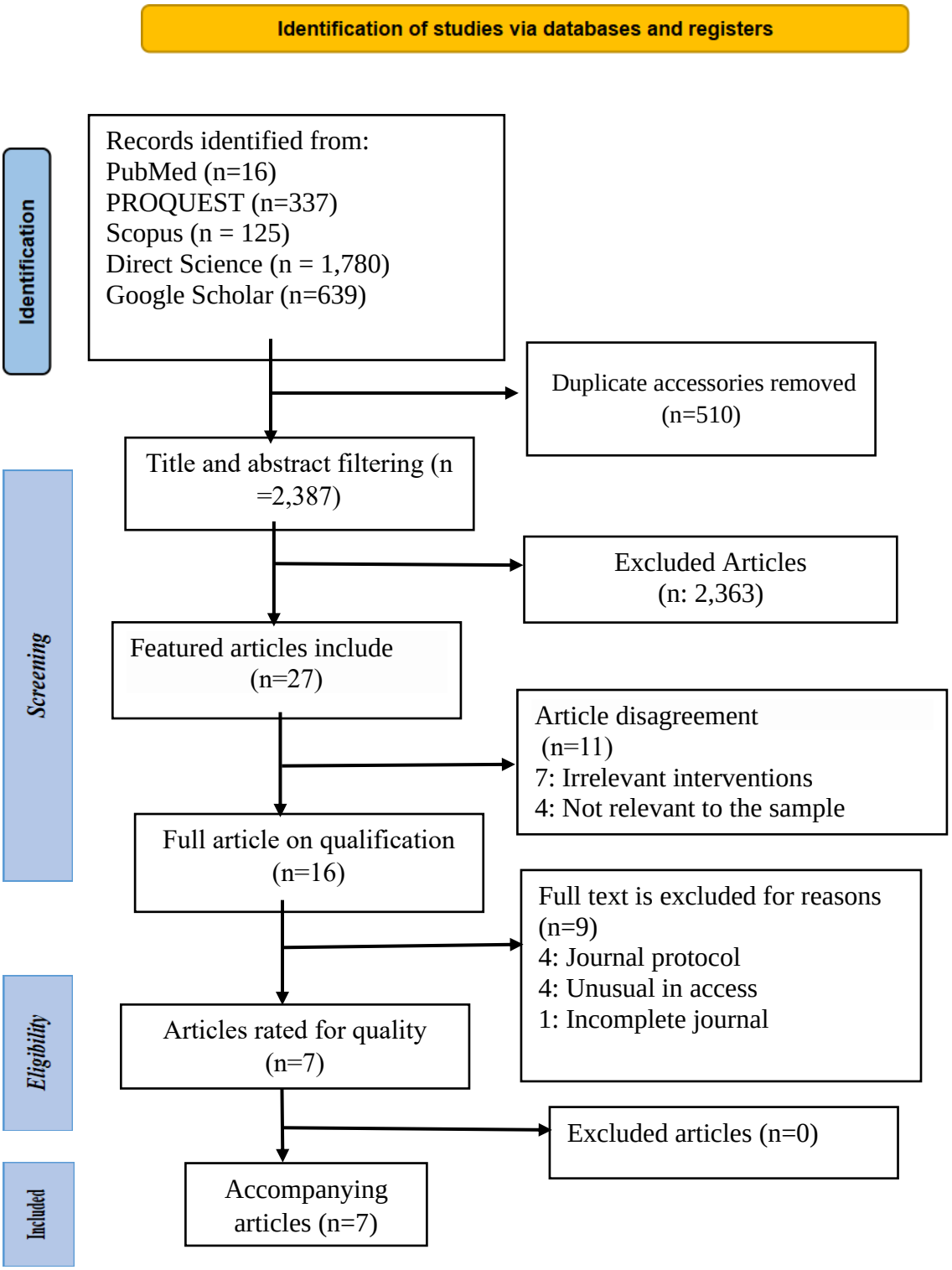

Figure 1. Diagram PRISMA

Table 2.
Characteristic Study

Author	Research design	Respondents	Group Intervention	Group Control	Dosage Training	Duration	Results
(Zengin & Aylaz, 2019)	A quasi-experimental	167 participants 84 /83	Implement 20-minute sleep hygiene intervention. Then follow up in week 8	There was no specific intervention. The control group got it after the study was complete.	For 20 minutes. Then follow up in week 8	20 minutes	From this study, the average PSQI score was 5.5 ± 2.1 for the experimental group and 13 ± 2.4 for the control. The mean post-FSS score was 22.6 ± 1.9 in the experimental group and 41.0 ± 4.2 for the control patients. However, the results showed that there was improvement of statistical significance (p = 0.000) of patients who involved on chemotherapy
(Oswald et al., 2022)	RCT	30 participants 15/15	This CBT-I is the first to use the BCS language recruited in Puerto Rico and	Waitlist control	90 minutes for 6 weeks via video confirmation	90 minutes	All patients enrolled in CBT-I (100%) attended ≥ 3 of the six appointment cycles. The

			randomized for eHealth's CBT-I group intervention. 90 minutes for 6 weeks via video confirmation				patients were satisfied with CBT-I until they are accepted. After the intervention, it found that there was a significant difference (d = 1.02) on sleep quality. As for the control group with eHealth therapy, it was (d=0.77). It proved that sleep disorders and sleep efficacy are accepted and deserved.
(Zachariae et al., 2018)	RCT	255participants 133/ 122	Patients with cancer-diagnosed sleep disorders with chemotherapy receiving iCBT-I therapy. which in the provision of sleep hygiene therapy Online measurement by looking at the severity of sleep quality	Waitlist control	Post-intervention (nine weeks)	45 to 60 minutes	The respondents consisted of 255 female patients randomized to receive CBT-I intervention consisting of (n=133) and a control group with a waiting list (n=122). It was found that there was statistically significant (P<.02)

							of sleep quality-related outcomes before receiving the intervention and after the treatment.
(Ahmed & Elmetwaly, 2019)	Quasi-experimental	100 adult patients undergoing chemotherapy	The discussion explained some behaviors related to sleep health (sleep hygiene instructions). Audiovisual and written instructions on the importance of good sleep hygiene.	Not	Researchers on each patient at the outpatient polyclinic after conducting sleep hygiene instructions for one month	30 minutes	There were significant differences in sleep and fatigue scores before and after the intervention. There was positive correlation on sleep problems and fatigue
(Bean et al., 2022)	RCT	101 participants (51/50)	The insomnia severity index, which is used as a measuring device, is given for 6 weeks. CBT-I+ Light includes 1 face-to-face session, 1 phone call, 7 emails, and 20 minutes of bright light (BL) each morning.	The control group is: TAU+ consists of treatment given as usual and two emails with relaxation audio tracks	Over 6 weeks.1 face-to-face session, 1 phone call, 7 emails, and 20 minutes.	20 minutes	It can be seen that there is an effect on the sleep quality of patients with insomnia than in the TAU+ group from this study.

(Alem et al., 2021)	RCT	70 patients 35/35	Patients from 35 interventions were given 2 60-minute training sessions on sleep hygiene, solutions to overcome exacerbations of prescribed sleep disorders and routine treatment.	The control group received routine education and care only 1 week and 3 weeks later after the intervention on the study patients.	For 3 weeks	60 minutes	The mean score of the problem on overall sleep quality differed significantly between the intervention and the control after three weeks.
(Li et al., 2023)	RCT	103 participants 51/52	Cognitive behavioral therapy (CBT-I) for the intervention and acupuncture for control group who did chemotherapy	Acupuncture control group	8 weeks	60 minutes and the remaining sessions are 30 minutes each	The results of the intervention and control group, namely CBT-I and acupuncture found a significant decrease in the total score of MFSI-SF and ISI at week 8. With a $p < 0.001$), CBT-I has the effect of reducing fatigue and insomnia

Quality Evaluation

Table 3.
Results of the JBI Critical Apraisal Assessment (Randomized Controlled Trial)

RCT	Questions	(Bean et al., 2022)	(Li et al., 2023)	(Zachariae et al., 2018)	(Oswald et al., 2022)	(Alem et al., 2021)
Q1	Is actual randomization used to assign participants to treatment groups?	Y	Y	Y	Y	Y
Q2	Is the allocation for the treatment group confidential?	Y	Y	Y	N	Y
Q3	Were the treatment groups similar at first?	Y	Y	Y	Y	Y
Q4	Do participants not know the medication task?	Y	N	N	N	Y
Q5	Do those who provide treatment not know the task of treatment?	N	N	N	Y	N
Q6	Were the treatment groups treated the same alongside the desired intervention?	Y	Y	Y	Y	Y
Q7	Are outcome assessors unaware of medication assignments?	N	Y	N	Y	Y
Q8	Was the outcome measured in the same way for the treatment groups?	Y	Y	Y	Y	Y
Q9	Are results measured in a reliable way?	Y	Y	Y	Y	Y
Q10	Is the follow-up complete and, if not, are the differences between the groups at the follow-up adequately explained and analyzed?	Y	Y	Y	N	Y
Q11	Were participants analyzed in random groups?	Y	Y	Y	Y	Y
Q12	Is proper statistical analysis used?	Y	Y	Y	Y	Y
Q13	Are the trial designs appropriate and do they deviate from the usual RCT designs (randomization of individuals, parallel groups) in the conduct and analysis of the trials?	Y	Y	Y	Y	Y
	Precentage	**84%**	**76%**	**76%**	**76%**	**92%**
	Group	**H**	**M**	**M**	**M**	**H**

Table 4.
Results of JBI Critical Appraisal Assessment (Quasi Experiment)

NOT	Questions	(Zengin & Aylaz, 2019)	Ahmad & Elmetwaly, 2019
Q1	Does this study explain cause and effect (where there is no confusion about which variable comes first)?	Y	Y
Q2	Did participants find similar differences?	Y	Y
Q3	Did the differences include participants who received a similar treatment in addition to the exposure or intervention of interest?	Y	N
Q4	Is there a control group?	Y	N
Q5	Is there a difference in the measurement of outcomes before and after the intervention?	Y	Y
Q6	Was follow-up complete or incomplete, was there a difference within the group in adequately described and analysed follow-up?	Y	N
Q7	Are participants' outcomes measured in the same way in the comparisons?	Y	Y
Q8	Are outcomes measured in a reliable way?	Y	Y
Q9	What is precise statistical analysis?	Y	Y
	Percentage	**100%**	**66%**
	Group	**H**	**M**

The results of the qualitative assessment used the JBI Critical Appraisal Checklist. The questions were fulfilled with two options; "Y" as "yes" and "N" refers to "no". An assessment score of more than 80% is classified as high quality, 60-80% is considered medium quality. Then, scores of less than 60% are considered low quality. The categories with "H" means "high" while "M" means "medium".

Characteristic Study

Participants

In this study, the participants consisted of 7 related journals, specifically cancer that underwent chemotherapy. The journals were determined through cluster technique to limit the discussion. The selected participants consisted of several countries including 5 countries: the United States (n = 2), Denmark (n = 1), Australia (n = 1), Turkey (n : 1), Egypt (1) and Iran (n : 1). Several of these studies were RCTs (n = 5), and quasi-experimental studies (n = 2) with cancer problems consisting of (n = 3) in patients with breast cancer and (n = 4) common cancers.

Result

The results of this study emphasized on sleep hygiene adopted from cognitive behavioral therapy (CBT-I). The method consists of several methods, i.e.: sleep hygiene, relaxation techniques, cognitive therapy, stimulation control therapy and Sleep restriction therapy (Inayati, 2022).

The review of seven selected journals revealed two articles on sleep hygiene and five articles on cognitive behavioral therapy (CBT-I). The articles employed the Sleep Quality Index (PSQI) and Insomnia Severity Index (ISI) questionnaires. Furthermore, four of the seven journals included did not have a comparison group, namely waiting list controls or no intervention. The remaining three journals included a comparison control group. In the study by (Bean et al., 2022), the TAU+ group received treatment as usual, which consisted of two emails with relaxation audio. Alem et al., (2021) employed a control group that also received regular education and awareness programmed one week and three weeks after the intervention. The control group in the Li et al., (2023) study received acupuncture therapy.

The intervention results from three articles with a control group that received therapy can be described as follows. Bean et al., (2022) stated that the intervention group was given 20 minutes of study duration for 6 weeks. It consisted of 1 face-to-face session, 1 phone call, 7 emails. The control group received TAU + which consisted of treatment given as usual and two emails with a relaxation audio track, the intervention group with the results of reducing the sleep quality of insomnia patients in cancer greater than the control group. The other study conducted by Alem et al., (2021) applied a 45-minute intervention. The results stated that the control group who received an educational programmed and routine care one and three weeks after getting the given intervention had a decrease in total sleep quality. In addition, other dimensions obtained significant differences between intervention and control after three weeks.

Furthermore, Li et al., (2023) mentioned that the intervention group of Cognitive Behavioural Therapy, such as sleep hygiene, and the control group who were treated with acupuncture therapy received a duration of 60 minutes for 8 weeks. In general, the differences in the intervention group and the control group were both significant. However, the total score at week 8 was significantly associated with improved sleep quality in the CBT insomnia group-$p < 0.001$. it means that the quality of poor sleep showed a much greater average improvement. Furthermore, four journal articles that received interventions from the control group and the intervention group with cognitive behavioral therapy through sleep hygiene, showed that sleep hygiene increase sleep quality of cancer patients undergoing chemotherapy (Zengin & Aylaz, 2019, Oswald et al., 2022, Zachariae et al., 2018, Ahmad & Elmetwaly, 2019).

The findings of seven articles indicate that the provision of sleep hygiene interventions is not only beneficial for improving sleep quality but also significant for reducing fatigue in cancer patients undergoing chemotherapy with sleep hygiene education (Zengin & Aylaz, 2019, Ahmed & Elmetwaly, 2019, Bean et al., 2022, Li et al., 2023). The training of sleep hygiene can positively impact sleep quality and reduce fatigue levels in patients. Sleep hygiene was first defined by Peter Hauri, a pioneer in the field. It is based on physiological principles and incorporates a number of beneficial sleep-promoting behaviors, including: The quality of sleep is also influenced by environmental factors, such as noise, the comfort of the bed, the presence of a partner during sleep, the location of the bedroom, the lighting, and the room temperature. An essential component of the sleep hygiene assessment is the analysis of positive sleep behaviors, including the quantity and quality of sleep, physical activity, alcohol consumption, nicotine and caffeine intake. The aforementioned variables can significantly impact the sleep quality.

DISCUSSION

The results of the review indicated that sleep hygiene therapy was effective for cancer patients undergoing chemotherapy who had poor sleep quality. The evidence was derived from five RCTs

and two quasi-experimental studies. The results of a meta-analysis of seven journal articles investigating the effectiveness of sleep hygiene interventions revealed that sleep hygiene is an effective approach for improving sleep quality and reducing fatigue in cancer patients undergoing chemotherapy. The provision of adequate sleep hours for cancer patients undergoing chemotherapy has been demonstrated to reduce feelings of nausea and subsequently alleviate fatigue.

These findings are corroborated by the results of previous research conducted by Ramfjord et al., (2023). This article reports the significant results of a study in which cognitive behavioral therapy (CBT) for patients with insomnia and chronic fatigue was self-reported, and it was concluded that it can be given as an additional intervention. It was found that sleep hygiene education could be provided to patients with poor quality sleep, and material on insomnia and CBT-I (sleep records) could be provided. The aforementioned findings have also been supported by Muz et al., (2021) which was given once a week for 3 weeks with a PSQI measuring device. The results of this article demonstrate that the effect of sleep hygiene given to patients undergoing hemodialysis on sleep quality and quality of life showed significant effective results, despite the fact that the results for adult PSEIN in this study yielded the same outcome.

In line with this study, the findings by Abozead et al., (2019) about CKD patients undergoing hemodialysis therapy mentioned that sleep hygiene focuses on improving the quality of sleep. The improvement of sleep quality influenced by habits, patterns, behaviors and the environment. The study was conducted on a cross-section of males and females within range of ages (18-65) using questionnaires, and structured interviews. The result of analysis found that there was significant difference between sleep quality before the intervention and after the intervention. Further, Ebrahimi et al., (2023) also noted that sleep hygiene for patients undergoing hemodialysis significant changes for sleep quality, depression, and fatigue before and after the intervention.

The findings can be supportive in the article; nevertheless, other journals can be used in addition to those focusing on patients with insomnia and fatigue. These other journals can be effective in supporting sleep hygiene, as well as those that focus on hemodialysis patients who experience difficulties with their sleep quality. However, there is the different ways of doing intervention in different diagnosis. The different can be seen in the scale of the intervention, which was conducted over a period of nine weeks. Education about insomnia was also provided. Research interviews conducted in conjunction with the study revealed that the duration of the intervention was once a week for three weeks, while other articles indicated that a similar duration was employed in sleep hygiene interventions for patients undergoing hemodialysis.

The four key findings are in alignment with the results presented in the article included, namely the provision of significant or effective sleep hygiene therapy for sleep quality, despite different diseases. These include CKD undergoing hemodialysis therapy and effective in patients with insomnia and fatigue. In light of seven research journal articles with several shortcomings, it could be highlighted about (1) the effective ways in providing sleep hygiene for patients who experience poor sleep quality in cancer patients undergoing chemotherapy; and (2) sleep hygiene is also effective for patients who experience fatigue. Based on the aforementioned research, sleep hygiene is an effective intervention for improving sleep quality and reducing fatigue in patients with cancer undergoing chemotherapy. The results obtained from the included articles related significant effectiveness in improving sleep quality in cancer patients undergoing chemotherapy.

Implications for Practice and Research

Based on the research findings, it could be implied that implementing effective sleep hygiene in cancer patients undergoing chemotherapy can improve their sleep quality. The value of providing sleep hygiene therapy to healthcare providers has also been assessed in the review of multiple aspects. The effectiveness of this therapy is contingent on its implementation in an orderly manner; it can be conducted at home or within the general hospital or community setting. Furthermore, this therapy is devoid of any harmful side effects, has a long-term efficacy, and is easily comprehensible.

The design of this study has a number of methodological weaknesses, including the lack of concealment in the allocation process and the lack of blinding of the assessor. A review of the seven journals selected reveals that two assessors were not blinded. Moreover, of the seven journal articles reviewed, four exhibited M-values on JBI Critical Appraisal results, indicating the possibility of subjectivity and bias in the assessment process.

Therefore, Further research is required to investigate the potential benefits of sleep hygiene interventions for improving sleep quality in cancer patients. This should include improvements to the quality of experimental studies and randomized controlled trials (RCTs), as well as the identification or review of specific outcomes. A critical review of existing research methodology reveals high standards of research quality, yet four of the seven reviewed articles have not yet been completed, highlighting the necessity for improvements in the research design and implementation process.

Survey limitations

This research has several inadequacies and limitations. Firstly, despite the large number of papers identified in the database search, which were appropriate for the sample and the intervention, the number of studies focusing on sleep hygiene as an intervention for enhancing sleep quality in cancer patients undergoing chemotherapy was limited. Secondly, the number of RCTs and quasi-experimental studies on the effectiveness of sleep hygiene therapy was low, resulting in just 7 articles. Therefore, there is limitation of the study in assessing the effect of sleep hygiene therapy on the sleep quality of cancer patients. These few findings may not be representative of all cancer patients due to limited review.

CONCLUSION

The results of the literature review revealed that there are seven journals of which three received the intervention and the control group was given comparative action. In contrast, the other four articles received the intervention, but the control group was only waitlisted or got nothing. However, from the selected article, effective sleep hygiene interventions are given to cancer patients undergoing chemotherapy. The finding proved that sleep hygiene is effective reducing fatigue issues in cancer patients undergoing chemotherapy. If the patients improve their sleep quality, it can lead to reduced fatigue issues.

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