



# Comparing the Effect of Compassionate Hypnotherapy and Acceptance and Commitment Therapy on Sleep Quality in Breast Cancer Patients



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## ABSTRACT

**Aims** In patients with cancer, sleep quality is disturbed, and they need treatment. Considering the side effects of medication, complementary therapy can be helpful. Therefore, this research aimed to compare the effect of two methods of compassionate hypnotherapy and acceptance and commitment therapy on the sleep quality in breast cancer patients.

**Materials & Methods** The research method was quasi-experimental with a pre-test-post-test design with a control group. The sample size was 45 people selected by convenience sampling method and using block randomization were allocated into 3 groups: compassionate hypnotherapy, acceptance and commitment therapy, and a control group (each group 15 patients). In group 1, compassionate hypnotherapy intervention and group 2, acceptance and commitment therapy intervention were performed during eight sessions. Before and after the intervention, the study groups completed the Pittsburgh Sleep Quality Questionnaire. The data was analyzed by SPSS 26 using Chi-square, ANCOVA, and MANCOVA.

**Findings** The average sleep quality in companionate hypnotherapy and acceptance and commitment groups was significantly higher than in the control group ( $p=0.001$ ). The compassionate hypnotherapy group indicated a significant improvement in the sleep quality score compared to the acceptance and commitment therapy group ( $p=0.001$ ).

**Conclusion** Compassionate hypnotherapy has a better effect than acceptance and commitment therapy on improving sleep quality.

**Keywords** Compassionate Hypnotherapy; Acceptance and Commitment Therapy; Sleep Quality; Breast Cancer

## CITATION LINKS

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## Introduction

One of the types of cancer that holds the highest incidence among women and is considered the second leading cause of cancer-related deaths in this group is breast cancer [1]. This cancer accounts for one-fifth of the deaths of women aged 32 to 42. According to the World Health Organization statistics in 2013, the annual incidence of this disease worldwide has increased from 1.8 to 2.0 [2]. In Iran, based on the statistics of the Ministry of Health's Disease Management Center, breast cancer still ranks first in terms of incidence among all cancers in women [3].

According to studies, the severity of symptoms and psychological pressures significantly impact the quality of life of patients with cancer [4]. Research indicates a high prevalence of emotional disorders such as depression, stress, anxiety, and decreased sleep quality due to the intensity of pain in cancer patients [5]. In a study, approximately 50% of cancer patients complained of pain caused by the growth of cancer cells, and the role of pain has been confirmed in the development of psychological disorders, especially depression and anxiety [6]. Typically, these psychological disorders lead to concern, a sense of inefficiency, and, consequently, a reduction in the quality of life and sleep quality of patients [7].

The quality of sleep is a complex phenomenon defined and assessed mentally. Sleep quality is described by mental indicators related to the sleep experience, such as satisfaction with sleep, feelings upon waking, a sense of calm during sleep, and sufficient duration. Sleep impacts health and vitality, mood and behavior, dynamism and emotions, occupational and marital life, happiness and well-being [8].

Therefore, to reduce the pain and psychological pressures associated with illness over the past three decades, physicians have utilized various therapeutic approaches alongside psychotherapies to improve the mental well-being of patients. Among these treatments, acceptance and commitment therapy (ACT) and hypnotherapy have been confirmed in numerous studies [9-11]. In acceptance and commitment therapy, acceptance is a crucial alternative to avoiding problems or illnesses. It involves actively and consciously accepting events for the individual, considering their personal history, and not making excessive efforts to reduce or alter the frequency of these events, especially when they lead to psychological damage. The committed individual is encouraged to apply their utmost effort and commitment towards achieving goals [12], teaching patients to put an end to their struggle with anxiety. Patients gain better control over their behavior and actions by engaging in activities that bring them closer to life goals and values [13]. Acceptance and commitment therapy instructs patients to acquire awareness skills and observe

unpleasant thoughts and feelings as they are instead of teaching more and better strategies for change by reducing unwanted thoughts and feelings [14].

Hypnotherapy is considered an effective and impactful method for treating various diseases and psychological disorders, and its influence has been confirmed in the treatment of psychological conditions in cancer patients. In hypnotherapy, the first step is to induce self-awareness and relaxation of both the body and mind to facilitate access to the unconscious. For this purpose, exercises can be performed to enhance concentration, calm the heartbeat, reduce breathing speed, and decrease tension-inducing factors. Subsequently, the therapist attempts to alter some unconscious mental barriers by creating mental imagery, repetition, and instilling phrases that are effective in treating the disorder. As a result, individuals find it easier to talk about their problems and accept psychotherapeutic solutions [11]. As part of cognitive-behavioral therapy, hypnotherapy based on compassion encompasses several fundamental methods, including relaxation through trance, guided imagery, cognitive restructuring, and desensitization. Hypnosis-based treatments provide an enhanced power within cognitive-behavioral therapeutic approaches. Suspending critical thinking in a hypnotic state makes the patient more receptive to persuasive cognitive-behavioral discussions [15].

In Smith's study, acceptance and commitment therapy improved athletes' sleep [9]. In Burian *et al.*, this treatment also improved sleep quality in patients with heart problems [16], and in Khazaie *et al.*, it improved sleep quality in patients with chronic insomnia [17]. Setyadi demonstrated the effectiveness of therapeutic hypnosis in reducing depression, anxiety, stress, and improving sleep quality in individuals with AIDS [18]. However, there is no study on the effects of each of the therapeutic hypnosis and acceptance-based commitment treatments on the sleep quality of cancer patients. Therefore, this study was carried out to compare the effectiveness of compassionate hypnotherapy compared to acceptance and commitment therapy of sleep quality and its components in breast cancer patients.

## Materials and Methods

This semi-experimental study was carried out in 2022-2023 with a pre-test and post-test design (two experimental and one control group) in women diagnosed with breast cancer who were referred to the Shahid Beheshti Hospital in Yasuj, Iran. A total of 45 individuals were selected using convenience sampling and randomly assigned into three groups; 15 participants in the acceptance and commitment treatment group, 15 in the compassion-based hypnotherapy group, and 15 in the control group. Acquiring a score between 20 and 28 (indicating moderate depression) on the depression

questionnaire, at least six months since the diagnosis of the disease, and having at least a diploma level of education were the included criteria. The exclusion criteria were non-participation in other psychotherapeutic sessions.

One of the best tools designed and developed for assessing sleep quality is the Pittsburgh Sleep Quality Index (PSQI).

This questionnaire was created in 1989 by Buysse *et al.* at the Pittsburgh Psychiatric Institute [19]. This questionnaire consists of 15 items with a four-point Likert scale from 0 to 3. The questionnaire comprises 7 subscales; mental sleep quality (Question 2), sleep onset delay (Question 1), sleep duration, which involves the response to Question 3 (more than 7 hours (score 0), 6 to 7 hours (score 1), 5 to 6 hours (score 2), and less than 5 hours (score 3)), sleep efficiency (the difference between Question 11 and Question 12), sleep disturbances (the sum of responses to Questions 4 to 10), use of sleep

medication (score of Question 13), and daytime dysfunction (scores of Questions 14 and 15). Buysse *et al.* initially developed and introduced this questionnaire and achieved internal consistency using Cronbach's alpha ( $\alpha=0.83$ ) [19].

Additionally, the questionnaire's reliability has been reported by various researchers, and its reliability coefficient was reported to be 0.8 [20].

The reliability of the questionnaire was also determined by Cronbach's alpha coefficient ( $\alpha=0.88$ ). After obtaining ethical approval from the research ethics committee and obtaining informed consent from eligible patients, participants filled out the PSQI (Week 0). Subsequently, the experimental group receiving Acceptance and Commitment Therapy (ACT) underwent eight sessions of 90 minutes each (Table 1) [21].

The compassion-based hypnotherapy intervention group also received eight sessions of 90 minutes each, following the protocol outlined (Table 2) [15].

**Table 1.** Summary of the content of group-based Acceptance and Commitment Therapy (ACT) intervention based on Zettle *et al.* [21]

Session	Aims	Description
<b>Pre-session</b>	Initial acquaintance with the participants, establishing a rapport, and creating a suitable relationship aiming to correctly fill out the questionnaires and build trust.	Pre-test
<b>Session 1</b>	Introducing the therapist, facilitating mutual acquaintance among group members, and establishing a therapeutic relationship.	Providing ACT, its relevance to chronic illness-related issues, outlining its goals and key principles, establishing rules governing therapy sessions, presenting information about breast cancer, reviewing relevant treatments, and discussing the costs and benefits of the therapy.
<b>Session 2</b>	Engaging in a discussion about individuals' experiences and assessing their feedback. Evaluating the individual's willingness for change and exploring patients' expectations from ACT.	Encourage creative diffusion, summarize the discussions presented in the first session, and assign homework tasks.
<b>Session 3</b>	Recognizing ineffective control strategies and ceasing futile pursuits.	Clarifying the concept of acceptance and distinguishing it from concepts such as failure, despair, and denial. Discussing the challenges and difficulties related to accepting the discussed illness. Summarize the presented discussions and review the exercise for the next session, then assign homework tasks.
<b>Session 4</b>	Receiving feedback from patients, introducing and understanding the concept of self-conceptualization and fusion, and addressing its disentanglement.	Utilizing cognitive defusing techniques, intervening in the functioning of problematic language chains and metaphors, and addressing thoughts and emotions. Summarize the discussions presented in the session, review the exercise for the next session, and assign homework tasks.
<b>Session 5</b>	Illustrating the separation between self, internal experiences, and behavior. Encouraging self-as-context, weakening self-concept, and expressing the self.	In these exercises, participants learn to focus on their activities (breathing, walking, etc.) and be aware of their states at each moment. When emotions, feelings, and cognitions are processed, they are observed without judgment. Summarize the discussions presented in the session, review the exercise for the next session, and assign homework tasks.
<b>Session 6</b>	Identifying the life values of patients and explicitly focusing on these values, emphasizing and paying attention to their power of choice.	Utilizing mindfulness techniques with an emphasis on the present moment, summarizing the discussions presented in the session.
<b>Session 7</b>	Examining the values of each individual and deepening previous concepts, differentiating between values, aims, and common mistakes in selecting values.	Potential internal and external obstacles to pursuing values were discussed. Members listed their most important values and potential obstacles in pursuing them. These were then shared with other members. Aims related to values and the characteristics of aims (specific, measurable, realistic, and aligned with personal values) were discussed in the group. Subsequently, members identified three of their most important values and determined the aims they would like to pursue in line with each. Finally, they specified behaviors they intend to engage in to achieve those aims, highlighting the risks of outcome-focused thinking.
<b>Session 8</b>	Understanding the nature of willingness and commitment (training commitment to action)	Identifying behavioral patterns consistent with values and establishing a commitment to act on them; discussing the concept of disease recurrence and readiness to cope with it; reviewing assignments and summarizing sessions along with references; sharing group members' experiences, achievements, unmet expectations; and finally expressing gratitude to participants for their participation in the group and conducting post-assessment.

**Table 2.** Summary of the Contents of Compassion-Based Hypnotherapy Sessions Based on Dowd's Research <sup>[15]</sup>

Session	Aims	Description
<b>Session 1</b>	Communication of group members and establishing therapeutic relationships	Introduction; therapist introduction; introduction to compassion-based hypnotherapy group, number of sessions, introduction of group members to each other, expressing expectations, group rules, explanation about breast cancer.
<b>Session 2</b>	Description of compassion-based hypnotherapy and commencement of treatment	Explanation of compassion-based hypnotherapy, correcting misconceptions about hypnosis, expressing beliefs and values by members, addressing the causes of problematic beliefs, relaxation exercise through guided imagery (relaxation exercise), and hypnotic suggestion.
<b>Session 3</b>	Identifying irrational thinking	Expressing and understanding the impact of irrational thinking on emotional disturbance, expressing and understanding the impact of irrational thinking on emotional disturbance, along with relevant suggestions in a hypnotic trance state.
<b>Session 4</b>	Examining the connection between beliefs and behaviors	Expressing the relationship between beliefs, thoughts, behavior, behavioral consequences resulting from beliefs, and relevant suggestions in a hypnotic trance state.
<b>Session 5</b>	Assigning meaning to self-talk and identifying core beliefs	Examining evidence and meanings of self-talk by group members along with relevant suggestions in the hypnotic trance state.
<b>Session 6</b>	Identifying core beliefs	Changing beliefs and their relationship with emotions, classifying core beliefs by group members, efficacy analysis, and creating replacement beliefs with necessary suggestions in a hypnotic trance state.
<b>Session 7</b>	Cognitive restructuring, along with hypnotic suggestions	Expressing characteristics of replacement beliefs and cognitive change with relevant hypnotic suggestions in a hypnotic trance state.
<b>Session 8</b>	Strengthening positive thoughts, and concluding sessions	Strengthening positive thoughts in a hypnotic trance, preparing group members to conclude hypnotic trance sessions and closing ceremony.

No intervention was provided to the control group. Interventions were conducted under the guidance of a psychologist. Before and after the completion of the therapy sessions, all three groups completed the PSQI questionnaire.

Data was analyzed by descriptive and inferential methods using SPSS 26 software. Single-variable Analysis of Covariance (ANCOVA) and multivariable Analysis of Covariance (MANCOVA) statistical methods were employed for data analysis. The significance level was set at less than 0.05.

### Findings

There were no significant differences in demographic parameters between the study groups ( $p > 0.05$ ; Table 3).

For data analysis based on the study objectives, the assumption of normal distribution in the population was first examined using the Shapiro-Wilk test (to assess the normality of the sample distribution), and the normality of the data was confirmed.

There were no significant differences between the study groups regarding the mean sleep quality scores and its subscales (Table 4).

After controlling for pre-test effects, the results indicated no significant time-group interaction effect,

but the group effect was significant in all post-tests. Furthermore, a significant difference was observed in the mean sleep quality scores between the control group and the ACT and hypnotherapy intervention groups after the intervention ( $p = 0.001$ ). Pairwise comparisons of mean sleep quality between the study groups using the Bonferroni test revealed that the mean sleep quality in both the hypnotherapy and acceptance and commitment therapy groups was significantly higher than in the control group. Moreover, a significant improvement in sleep quality was observed in the hypnotherapy group compared to the ACT group ( $p = 0.001$ ). Results of the comparison of sleep subscales between the study groups after the intervention indicated that the group effect was significant in all post-tests except for the "delay in falling asleep" subscale. Bonferroni pairwise comparisons revealed improvement in each intervention group (hypnotherapy based on compassion and ACT) compared to the control group. However, significant improvement was observed only in the sleep mental quality ( $p = 0.001$ ) and sleep disorders ( $p = 0.005$ ) subscales in the hypnotherapy group based on compassion compared to the acceptance and commitment therapy group (Table 5).

**Table 3.** Frequency distribution of demographic parameters in women with breast cancer in study groups

Parameter		ACT		Hypnotherapy		Control	
		Frequency	Percent	Frequency	Percent	Frequency	Percent
<b>Age (years)</b>	30-36	3	20	2	13.4	2	13.4
	37-43	9	60	8	53.3	8	53.3
	44-50	3	20	5	33.3	5	33.3
<b>Education level</b>	Diploma	9	60	9	60	10	66.7
	Academic education	6	40	6	40	5	33.3
<b>Occupation status</b>	Housekeeper	8	53.3	8	53.3	8	53.3
	Freelance	2	13.4	2	13.4	3	20
	Governmental	5	33.3	5	33.3	4	26.7
<b>Education level</b>	Diploma	9	60	9	60	10	66.7
	Academic education	6	40	6	40	5	33.3
<b>Occupation status</b>	Housekeeper	8	53.3	8	53.3	8	53.3
	Freelance	2	13.4	2	13.4	3	20
	Governmental	5	33.3	5	33.3	4	26.7



**Table 4.** Comparison of the mean scores of sleep quality and its subscales before the intervention

Parameter	Parameter	Mean±SD	F	p-Value
Sleep quality	ACT	24.53±3.71	0.047	0.954
	Hypnotherapy	24.80±3.14		
	Control	24.86±2.47		
Mental quality of sleep	ACT	2.06±0.79	0.039	0.962
	Hypnotherapy	2.00±0.75		
	Control	2.06±0.70		
Delay in falling asleep	ACT	2.00±0.84	0.135	0.874
	Hypnotherapy	2.13±0.74		
	Control	2.00±0.84		
Sleep efficiency	ACT	2.40±0.73	0.061	0.962
	Hypnotherapy	2.33±0.72		
	Control	2.33±0.81		
Sleep disturbances	ACT	10.60±2.82	0.061	0.988
	Hypnotherapy	10.80±2.70		
	Control	10.93±2.34		
Use of sleep medications	ACT	2.40±0.73	0.114	0.893
	Hypnotherapy	2.46±0.63		
	Control	2.33±0.89		
Daily functioning disorders	ACT	3.00±1.30	0.012	0.988
	Hypnotherapy	3.06±1.33		
	Control	1.06±1.43		
Duration of sleep	ACT	2.06±0.79	0.105	0.901
	Hypnotherapy	2.00±0.84		
	Control	2.13±0.74		

**Table 5.** Comparison of the mean scores of sleep quality and its subscales between the study groups after the intervention

Parameter	Group	Mean±SD	F	p-value	Effect size
Sleep quality	ACT	18.86±3.50	57.236	0.001	0.751
	Hypnotherapy	13.93±4.04			
	Control	25.60±2.99			
Mental quality of sleep	ACT	1.33±0.72	37.313	0.001	0.681
	Hypnotherapy	0.73±0.59			
	Control	2.20±0.67			
Delay in falling asleep	ACT	1.80±0.86	1.815	0.178	0.094
	Hypnotherapy	1.73±0.96			
	Control	2.06±0.79			
Sleep efficiency	ACT	1.60±0.63	27.987	0.001	0.615
	Hypnotherapy	1.20±0.86			
	Control	2.33±0.86			
Sleep disturbances	ACT	8.40±3.04	16.784	0.001	0.490
	Hypnotherapy	5.46±4.13			
	Control	10.86±2.92			
Use of sleep medications	ACT	2.00±1.00	5.577	0.006	0.251
	Hypnotherapy	1.93±0.88			
	Control	2.53±0.91			
Daily functioning disorders	ACT	2.06±1.33	21.269	0.001	0.549
	Hypnotherapy	1.33±0.81			
	Control	3.26±1.43			
Duration of sleep	ACT	1.66±0.97	4.554	0.017	0.206
	Hypnotherapy	1.53±0.91			
	Control	2.33±0.61			

## Discussion

This study aimed to determine the effectiveness of compassion-based hypnotherapy compared to acceptance and commitment therapy on sleep quality in breast cancer patients, and the results seem promising.

The findings indicated that overall sleep quality and all subscales, except for the "delay in falling asleep" subscale, improved in both treatment methods of compassion-based hypnotherapy and acceptance and commitment therapy. In pairwise comparisons, this improvement was observed in both intervention groups. Still, the compassion-based hypnotherapy group showed a greater improvement in sleep quality, mental sleep quality, and sleep disorders compared to the acceptance and commitment

therapy group. While there is no direct comparison of the effectiveness of compassion-based hypnotherapy and acceptance and commitment therapy on the studied variables, numerous studies have confirmed the positive impact of these therapeutic approaches on psychological and personality variables in various illnesses.

In the current study, compassion-based hypnotherapy led to an improvement in sleep quality and its subscales, except for the delay in falling asleep, in women with breast cancer. A systematic review study on hypnotherapy in cancer patients showed positive effects on emotional distress, pain, anxiety, and depression, consistent with our findings [22]. Additionally, a study by Arnoldo *et al.* reported that hypnotherapy improved the quality of life in

cancer patients [23]. A systematic review investigating the impact of hypnosis on sleep disorders reported positive findings in the majority (62.5%) of studies, mixed results in 12%, and negative results in 25% [24]. It is important to note that not all hypnotherapy studies show consistent improvements in sleep, and the variations may be attributed to differences in samples, study methods, measurement tools, and the nature of different diseases.

Based on the findings of this study, Acceptance and Commitment Therapy led to an improvement in sleep quality and its subscales, except for the delay in falling asleep, compared to the control group. However, it did not show improvement compared to the hypnotherapy group. Similar to the findings of this study, Burian *et al.* studied the effectiveness of ACT on pain intensity, sleep quality, and mental and physical health in hospitalized coronary heart disease patients. The results showed that ACT significantly influenced pain intensity, sleep quality, psychosocial adaptation to the disease, and self-care in coronary heart disease patients [16]. Furthermore, in a study investigating the effectiveness of Acceptance and Commitment Therapy on the exercise performance of baseball players based on psychosocial adaptation, emotional fatigue, sleep quality, and muscle pain, the results demonstrated that ACT significantly improved sports performance and regular, more challenging exercises to enhance psychosocial adaptation, reduce emotional fatigue, improve sleep quality, and alleviate muscle pain in baseball players under team conditions [16]. Additionally, Khazaie *et al.* conducted a study examining the effectiveness of Acceptance and Commitment Therapy on emotional regulation and sleep quality in patients with chronic insomnia. They found that Acceptance and Commitment Therapy significantly contributed to improving emotional regulation and sleep quality in patients with chronic insomnia [17].

It was found that the hypnotherapy intervention based on compassion demonstrated a greater improvement in sleep quality, as well as the subscales of mental sleep quality and sleep disorders, compared to the commitment-based treatment group. Explaining the research findings regarding the significant effectiveness of compassion-focused hypnotherapy compared to acceptance and commitment therapy in reducing sleep quality in women with breast cancer, it can be stated that in compassion-focused hypnotherapy, the researcher induced the experimental state of trance, tapping into the childhood experiences of the women in the experimental group. By placing them in a hypothetical cocoon, the researcher brought experiences that had created psychological wounds to light. These women were unable to heal these psychological wounds in their unconscious mind, and gradually, over time, this led to a deeper impact on their behavior. The compassion-focused

hypnotherapy aims to bring these experiences from the unconscious to conscious awareness. Replacing pleasant and positive experiences in the unconscious and conscious states during trance created a deep inner peace within them. This inner peace, associated with relaxation, had a greater impact on sleep quality, accompanied by tranquility, among women with breast cancer compared to acceptance and commitment therapy.

## Conclusion

Compassionate hypnotherapy has a better effect than acceptance and commitment therapy on improving sleep quality.

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**Ethical Permissions:** This research has been approved by the Ethics Committee of Yasuj Islamic Azad University in Iran (IR.IAU.Yasooj.REC.1400.005). Informed consent was obtained from the patients. Patient confidentiality and privacy were strictly maintained. The Helsinki Declaration guidelines for working with patients were adhered to. The patients incurred no costs, and the interventions did not cause any harm to them.

**Conflict of Interest:** The authors of this study declare no conflicts of interest with each other.

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