

# Effectiveness of cognitive behavioral therapy in women with breast cancer with depression and/or anxiety: A systematic review

Efectividad de la terapia cognitivo-conductual en mujeres con cáncer de mama con depresión y/o ansiedad: una revisión sistemática

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## SUMMARY

**Background:** Breast cancer is considered the most common and leading cause of death in women worldwide, affecting quality of life and mental health, with depression and anxiety being common mental disorders. The systematic review aimed to evaluate the effectiveness of cognitive behavioral therapy in the management of depression and/or anxiety in women

with breast cancer. **Methods:** It was conducted a systematic review of clinical trials of patients diagnosed with breast cancer who had depression and/or anxiety and had received psychological intervention, especially Cognitive Behavioural Therapy (CBT), comparing the effectiveness of CBT with pharmacological therapy and/or psychological therapies other than CBT. **Results:** We included 11 studies with 735 participants from four continents: Asia, Europe, North America, and Latin America; most of the interventions were conducted with group Cognitive Behavioural Therapy, showing greater effectiveness for managing depression and anxiety in women with cancer than other psychological therapies. **Conclusions:** Group

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*CBT generates significant changes with medium to large effect sizes, showing reductions in depression and anxiety symptomatology in women with breast cancer.*

**Keywords:** *Breast cancer, depression, anxiety, women, Cognitive Behavioural Therapy (CBT).*

## RESUMEN

**Introducción:** *El cáncer de mama se considera la causa más frecuente y principal de muerte en mujeres en todo el mundo, y afecta la calidad de vida y la salud mental, siendo la depresión y la ansiedad trastornos mentales frecuentes. La revisión sistemática tuvo como objetivo evaluar la efectividad de la terapia cognitivo-conductual en el tratamiento de la depresión y/o la ansiedad en mujeres con cáncer de mama. Métodos:* *Se realizó una revisión sistemática de ensayos clínicos de pacientes diagnosticadas con cáncer de mama que presentaban depresión y/o ansiedad y que habían recibido intervención psicológica, especialmente Terapia Cognitivo Conductual (TCC), comparando la efectividad de la TCC con la terapia farmacológica y/o terapias psicológicas distintas de la TCC. Resultados:* *Se incluyeron 11 estudios con 735 participantes de cuatro continentes Asia, Europa, Norteamérica y Latinoamérica, la mayoría de las intervenciones se realizaron con Terapia Cognitivo Conductual grupal, mostrando mayor efectividad para el manejo de la depresión y la ansiedad en mujeres con cáncer que otras terapias psicológicas. Conclusiones:* *La TCC grupal genera cambios significativos con tamaños del efecto de medianos a grandes mostrando reducciones en la sintomatología de depresión y ansiedad en mujeres con cáncer de mama.*

**Palabras clave:** *Cáncer de mama, depresión, ansiedad, mujeres, Terapia Cognitivo Conductual (TCC).*

## INTRODUCTION

Cancer is considered a chronic degenerative disease that affects the quality of life of both patients and their caregivers. Among the types of cancer, breast cancer is regarded as the most frequent and the main cause of death in women worldwide. This type of cancer not only represents a significant burden in terms of mortality but also in terms of quality of life, especially in less developed countries, where deaths from breast cancer occur in women under 70 years old (1-5).

The impact of breast cancer goes beyond the physical effects of the disease and treatments. This disease significantly affects the emotional and social well-being of patients, contributing to the development of disorders such as anxiety, depression, and stress. These emotional disorders require interdisciplinary management involving both psychologists and psychiatrists to stabilize the mental health of patients, which in turn improves the results of oncological treatment (6-10).

In this context, cognitive behavioral therapy (CBT) has been recognized as an effective intervention for the management of anxiety and depression in women with breast cancer. Studies indicate that between 15 %-25 % of women with breast cancer experience these disorders, and CBT is effective in reducing these symptoms and promoting a better quality of life. Specifically, behavioral activation (BA), a technique within CBT, has shown positive results in emotional regulation and the general well-being of patients (11).

Pre-experiment (n=18) showed a statistically significant difference in the reduction of depression symptoms after the AC intervention, with a notable decrease in the pretest (M=7.72, SD=8.094) and posttest (M=2.28, SD=2.608) depression scores,  $t(17) = -4.002$ ,  $p=0.001$ ,  $d=1.658$ . These results underline the potential of AC to improve mental health in women with breast cancer significantly, decreasing symptoms of anxiety and depression and registering a considerable effect size (12).

Among the various CBT techniques and tools, psychoeducation plays a crucial role. Psychoeducation not only improves understanding of the disease and adherence to treatment but also helps reduce anxiety related to cancer and its treatment. Evidence supports that group CBT offers essential emotional support, assisting patients in coping with the negative impact of cancer, adapting to the disease, and improving quality of life (13-16).

Considering this problem, several studies developed in different countries (12,17-25) agree that group CBT provides essential emotional support to cope with the negative impact of cancer, adapt to the disease, and express feelings, emotions, and daily experiences. In addition,

these studies highlight how group CBT facilitates the establishment of new social relationships and bonds that help to understand the isolation and loneliness experienced by patients with this type of cancer. Likewise, the implementation of positive strategies in directed groups is analyzed, allowing for the identification of problems and mobilization of personal resources, facilitating healing, and improving the quality of life (26-39).

Comparatively, the literature shows that other psychological interventions, such as psychosocial therapies, Gestalt therapy, Transpersonal Psychology, and group therapies, are less effective than CBT in managing depression and anxiety in patients with breast cancer (2,17,20,22,40,41). This highlights the importance of evaluating and highlighting the efficacy of CBT in this specific context, identifying the mechanisms that contribute to patient satisfaction and well-being through the therapeutic strategies employed.

Therefore, it is important to evaluate the effectiveness of cognitive behavioral therapy in the management of depression or anxiety in women with breast cancer, to identify the intervention of mechanisms that generate satisfaction and well-being with the therapeutic strategies used.

## METHODS

The systematic review was developed using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology, using the phases proposed by (42): search, identification, selection, choice, and interpretation. It was registered in the Prospective International Register of Systematic Reviews (PROSPERO) under the number CRD42023458611.

### Search process

The search initially included the databases PsycINFO, Scopus, Cochrane Central Register of Controlled Trials, CENTRAL, Web of Science, and APA PsycNet, as they are the most widely used in high-impact manuscripts at a global level in the area of knowledge, using

the following search descriptors: “clinical trials”, “psychological therapy”, “psychological treatment”, “Cognitive-Behavioural Therapy”, “pharmacological treatment”, “women”, “breast cancer”, “anxiety”, “depression”.

### Selection process

Studies published in scientific journals collect relevant data on psychological and pharmacological interventions in women with breast cancer who suffer from depression and/or anxiety. The inclusion criteria were studies with women with breast cancer who suffer from depression and/or anxiety and who have received cognitive behavioral therapy, other psychotherapies, or pharmacological treatments for their management.

Six hundred eighty articles were detected and exported to BibTex format in Mendeley, of which 26 duplicate citations were identified. Subsequently, the titles and abstracts of the remaining 654 articles were reviewed, excluding 643 studies whose central theme was not intervention but clinical trials with CBT, psychological, or pharmacological therapies in breast cancer patients presenting with depression and anxiety. During the selection process, disagreements between reviewers were managed through discussion and consensus; if necessary, a third reviewer with expertise in the subject was consulted to resolve the arguments. According to this procedure, 11 articles were ultimately selected for review in this study (Figure 1).

### Election process

The 11 articles selected included 735 clinical trial participants from 8 countries on four continents: Asia (Iran, Korea, and Japan), Latin America (Mexico and Puerto Rico), North America (United States), and Europe (France and Spain) for full-text reading and data analysis. An Excel database was then organized for analysis. The following information was recorded for each article: authors, year of publication, sample selection, geographical location, population characteristics, training of the intervening professional, type of therapy (psychological/pharmacological), intervention (psychological or

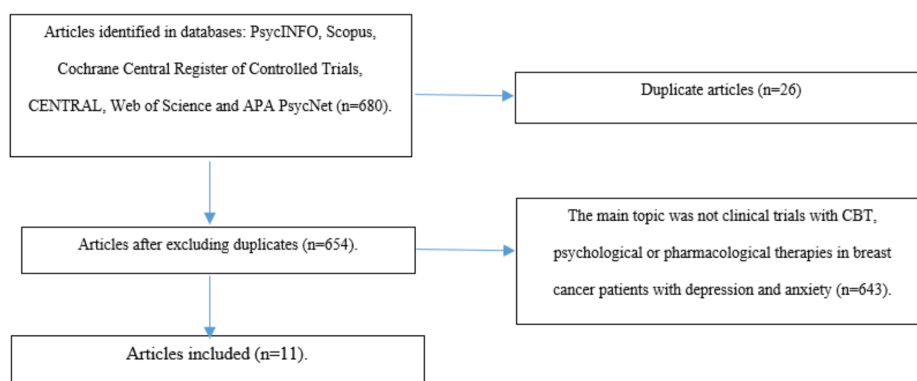


Figure 1. Flow chart of elements selected for review.

Note: The graph represents the item selection process according to PRISMA.

medical approach, medication used if applicable, effect size and effectiveness of the therapy).

### Context

Clinical trials were carried out on women with breast cancer published in English or Spanish in journals without geographical or temporal delimitation. Participants could be inpatients or outpatients, regardless of cancer type or stage. Diagnostic criteria for depression and/or anxiety should be based on ICD-11 or DSMV, regardless of the level of severity. The review was interested in studies that have measured depression and/or anxiety with psychometric questionnaires whose internal consistency is greater than 0.75, either by Cronbach's Alpha or McDonald's Omega. The diagnosis of depression and/or anxiety have been made by health professionals such as psychologists, psychiatrists, and doctors (in special cases).

### Data extraction (selection and coding)

Primary search was conducted in the selected databases using the discriminated keywords in MeSH. Two independent teams of three researchers reviewed each article's title and abstract, selecting articles most likely to present relevant information for the study.

The following variables were collected in MS Excel: first author, publication date, country, title, abstract, DOI and/or URL, journal, language, country where the study was conducted, journal publisher, journal quartile, database, or source. The teams then compared the selection; during this process, articles with a selection match were included in a final database.

Secondly, teams again worked independently on the new database, which guided the articles read at length and analyzed. In this step, the information was stored in a second Excel template, which included authors, year of publication, methodology, sample selection, geographical location, population characteristics, training of the intervening professional, type of therapy (psychological/pharmacological), effect size, and effectiveness of the therapy. The results of the reviews were then compared between the two groups and in case of disagreements, the authors consulted a third author who had not participated in recent searches and acted as a judge. The papers were reviewed again, and a third "consensus" Excel spreadsheet was completed, in which the inclusion criteria were checked.

### Bias risk assessment (quality)

The following sequence was considered to assess the risk of bias:

A team of two authors, who were not involved in data extraction, assessed methodological quality using the Rob2 tool (<https://methods.cochrane.org/bias/resources/rob-2-revised-cochrane-risk-bias-ensayos-aleatorizados-de-herramientas>).

The aspects of the articles to be evaluated were: Randomization process; Deviation from expected interventions; Lack of outcome data; Outcome measurement; Selection of reported outcomes. The results of the Rob2 tool classified studies as having a “high risk,” “some concerns,” or “unclear” risk of deviation.

Once the studies had been classified, all authors participated in the discussion on disagreement.

**Strategy for data synthesis. The information is presented in three sections.**

1. The results are described in narrative form according to the main categories (by treatments): CBT, other psychotherapies, and pharmacological treatment.
2. Tables showing data frequencies such as geographical location, sample size or population characteristics, professionals involved in the process, name of the drugs used in the pharmacological treatments, effect size, names of therapies and other relevant data to the review.
3. The last section presents a synthesis of the results of CBT therapy, other psychotherapies, and pharmacological treatments in women with breast cancer and depression and/or anxiety.

## RESULTS

### Effectiveness of interventions

Table 1 shows the socio-demographic data of the studies reviewed to analyze the effectiveness of cognitive behavioral therapy in women with breast cancer with anxiety and depression; it can be seen that in Asia, all the intervention therapies were group therapies, with an age range

of participants between 20-75 years, particularly in Korea there is a study with a larger sample size (102 subjects) where the professionals in charge were nurses and doctors and with an intervention approach based on transpersonal therapy. Similarly, for all the studies reviewed in this continent, a significant decrease in anxiety and depression symptoms was observed.

In Latin America, smaller sample sizes are evident in comparison with the Asian continent, where the subjects ranged in age from 18 to 75 years; in the countries included in the Latin American review, 60 % of the professionals who applied the therapy were psychologists and the remaining 40 % were doctors. Individual therapy prevails over group therapy. Likewise, all intervention approaches were based on cognitive behavioral therapy. Regarding the effectiveness of the intervention in the studies reviewed, significant changes are evident, with effect sizes ranging from medium to large.

There is evidence that group therapy with an intervention approach based on yoga and Transpersonal Psychology was used in North America and the United States. The participants were between 27 and 71 years old, and doctors applied the treatment. There was no evidence of significant changes in the depressive symptomatology of the subjects evaluated.

On the other hand, on the European continent, there is a French study with a larger sample size (203 subjects); both in France and Spain, it is evident that they opted for group therapy with smaller age ranges of participants compared to the other countries ranging from 30-65 years, the intervention approach focused on psychoeducation and behavioral therapy and is applied by professionals in psychology, with significant results in terms of reducing the symptoms of depression and anxiety.

### Sample size findings

The 11 clinical trials reviewed present variations in sample size ranging from 6 to 203 women aged between 18 and 75 years; the total sample was 735 participants in studies carried out in 11 countries on four continents.

Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Intervention (psychological approach or medical approach)	Medicines used if applicable.	Size of the effect	Effectiveness of therapy
(22)	A quasi-experimental study was conducted with pretest, posttest, and control groups. Participants in both the experimental and control groups completed the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI) as pre- and post-tests. Covariance analysis was used as the statistical method.	Thirty women with breast cancer diagnosed at Shohada Hospital in Tajrish, Tehran, who were covered by the Cancer Research Centre (CRC), completed the Beck Anxiety Inventory using a convenience sampling method. Inclusion criteria for the current study population were: 1) age between 30 and 65 years; 2) literate; 3) breast cancer diagnosed at stage I, II, or III in patients who completed standard therapies. Exclusion criteria were: 1) Mental disorders and other cancers and 2) Concurrent participation in other psychology courses.	Iran	Psychologists and Doctors	The type of intervention lies in psychosocial interventions, taking into account that these can play an important role in reducing anxiety and depression among breast cancer survivors. Therefore, group coaching based on acceptance and commitment therapy can help women cope better with their condition and decrease their anxiety and depression.	Cognitive-behavioral therapies.	Not applicable	The findings of the present study have shown that patients with breast cancer after participating in the behavioral activation intervention lowered their anxiety levels.	In the acceptance and commitment group training, anxiety and depression decreased significantly ( $p < 0.05$ ). The results demonstrated that group training based on acceptance and commitment therapy is an effective method to reduce anxiety and depression. Therefore, psychological interventions can be used to reduce the psychological difficulties of women with breast cancer.
(2)	A descriptive study will be conducted under pre- and post-test evaluations. Instruments were applied, including sociodemographic questionnaire, the Hospital Anxiety and Depression Scale (HADS), Beck Depression	Six women with breast cancer in remission stage tertiary hospitals in Mexico City, with an age range of 31 to 75 years, in which sociodemographic variables of the participants were considered, such as residence, marital status, education, occupation, clinical	Mexico	Psychologists	The intervention was carried out in three phases: the first is the application of technical instruments and formats for evaluation; the second is planning and organizing tasks and activities oriented to the patients' lives and values, preparing them to confront and resolve difficulties; and the third is preparation for closure, reinforcement of therapeutic strategies to remain active, and application of inventories.	Brief Activation Therapy for Depression (BATD-R), from psychoeducational interventions and behavioral activations oriented towards quality of life and comprehensive health.	Not applicable	It was concluded that the BATD-R protocol resulting from the Behavioral Activation model was assertive and functional under execution in hospital contexts.	According to the BDI-II scores, all six patients presented a clinically significant decrease (RCUT = 2.55-4.58). Patients two, four, and five presented better HRQL results and a significant clinical change (IQR = -2.01 to -5.44).

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...continuation Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Intervention (psychological approach or medical approach)	Medicines used if applicable.	Size of the effect	Effectiveness of therapy
	Inventory-II (BDI II), the EORTC-QLQ C30, as well as four self-registration formats of the BATD protocol.R.								
(21)	Two hundred and three patients recruited after primary treatment were randomly assigned to a treatment group (psychoeducational intervention) or a waiting list control group. The 8-week program of 2-hour sessions included topical discussions, information, and training in stress management techniques	Two hundred three recruited after primary treatment were randomly assigned to a treatment group (psychoeducational intervention) or a waiting list control group.	France	Psychologists	Psychoeducational Intervention: The program consisted of 8-week sessions of 2 hours, which included thematic debates, information, and training in stress management techniques.	Psychoeducational Group Intervention does not specify focus.	Not applicable	A significant anxiety reduction (STAI, POMS) was found among group participants, as a reduction in anger, depression, and fatigue (POMS), a significant improvement in vigor and interpersonal relationships (POMS), in the emotional and role functioning, health, state, and level of fatigue (EORTC QLQ-C30). In contrast, coping strategies (MAC) were not significantly different between the groups. No adverse effects related to the group were observed and overall satisfaction levels were very high	The study demonstrates the feasibility and effectiveness of a psychoeducational intervention, which can accelerate the reduction of adverse effects present at the end of treatment. It represents an excellent complement or an alternative to individual psycho-oncological therapeutic support, widely proposed in France, and should now be tested in groups with other types of cancer and other phases of the disease.
(12)	An open clinical trial was conducted with a single group (n=21). The intervention lasted 12 weeks, and the participants received services	For twenty-one participants aged between 35 and 70 years, non-probabilistic sampling was used due to availability and snowball	Puerto Rico	Psychologists, physiologists, and physical educators.	Behavioral activation therapy, through physical activity.	Cognitive-behavioral therapy.	Not applicable	There was a statistical difference significant in the reduction of depression symptoms shown in the pre-test (M = 7.72, SD = 8.094) and the post-test (M = 2.28, SD =	The results confirm the hypothesis of the impact of AC through AF on the significant reduction in symptoms of depression and anxiety in this sample.

Continued in pag. 809...

...continuation Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Intervention (psychological approach or medical approach)	Medicines used if applicable.	Size of the effect	Effectiveness of therapy
	at the University of Puerto Rico Sports Complex. Repeated measures t-test analyzes were performed and effect sizes were calculated. This research is based on a pre-experimental design. The typology corresponded to the design with a single group.	They disseminated the information through promotional sheets on the bulletin boards of the University of Puerto Rico, Río Piedras campus (UPRRP), institutional email of the UPR system, social networks, support groups for patients of cancer and hospitals where SCM received treatments and services. Likewise, some participants referred other survivors who were interested in participating. Participants were recruited in the prolonged/extended or permanent stages. All survivors had completed medical treatment. Eighteen women of Puerto Rican nationality participated, 2 Dominican and 1 Chilean, who resided in Puerto Rico.	Korea	Nurses, Doctors	Brain Wave meditation with vibration for women with breast cancer.	Transpersonal psychology	Not applicable	12.608), t(17) = -4.002, p = .001, d = 1.658. The results suggest that after completing the AC intervention with PA, the depression symptoms of this sample decreased significantly and a large effect size was reported. The results showed a statistically significant difference in the reduction of anxiety symptoms reported in the pre-test (M = 4.83, SD = 5.250) and post-test (M = 1.83, SD = 3.130), t(17) = -3.445, p = .003, d = 1.415. The results suggest that after completing the AC intervention with PA, the anxiety symptoms of this sample decreased. Significantly and a size of significant effect.	These findings indicate that meditation could be a positive, non-invasive intervention for breast cancer patients undergoing radiotherapy.
(43)	A randomized, open-label clinical trial investigating the effects of meditation on anxiety, depression, study.	They interviewed 252 potential candidates, and 102 patients agreed to participate in the study. Each group	Korea	Nurses, Doctors	Brain Wave meditation with vibration for women with breast cancer.	Transpersonal psychology	Not applicable	BWV meditation significantly decreased anxiety and fatigue and improved overall quality of life in breast cancer patients undergoing radiotherapy.	These findings indicate that meditation could be a positive, non-invasive intervention for breast cancer patients undergoing radiotherapy.

Continued in pag. 810...



EFFECTIVENESS OF COGNITIVE BEHAVIORAL THERAPY

...continuation Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Intervention (psychological approach or medical approach)	Medicines used if applicable.	Size of the effect	Effectiveness of therapy
	fatigue, and quality of life in women receiving radiotherapy for breast cancer.	had 51 patients. They were recruited for approximately three months, from April 27, 2011, to July 30, 2011.							
(20)	Longitudinal study to understand how maladaptive emotions evolve when participating in group therapy to improve quality of life. It was evaluated with an individual interview, data from the clinical and psychological history were collected, the patient's emotional state was assessed, and subsequently, the patient was included in a support group, depending on whether she complied with the clinical and psychological criteria indicated above. To know the emotional evolution of the patients throughout the eight months of group intervention, three assessments were carried out: the	Thirty-eight women aged between 35 and 65 years. Inclusion criteria: women with breast cancer with psychosocial difficulties due to the diagnosis, the disease, or its treatment, evolved, for example, anxiety, depression, stress, sadness, emotional exhaustion, lack of hope, etc.; and patients who need or want to communicate and share their experience with people who have suffered the same disease. Exclusion criteria: patients with breast cancer with metastasis will be in the active treatment phase (except adjuvant hormonal treatment). Be in the relapse phase; the presence of two different primary tumors; the presence of other important associated diseases that may interfere	Spain	Psychologists	Cognitive-Behavioral Therapy	The intervention involved group psychological support therapy, overseen by a psychology professional. Each group, comprising a minimum of 5 and a maximum of 10 individuals, met biweekly for an hour and a half over approximately eight months, equating to 20 sessions per group. The psychology professional guided and facilitated the group discussions, ensuring a supportive and constructive environment. Applied group therapy combines the expression of emotions (emotive-expressive therapy) with the practice of cognitive-behavioral techniques to reduce emotional difficulties derived from the diagnosis and treatment of the disease, facilitate adaptation and improve quality of life.	Not applicable	The Friedman test was used. The comparison test for paired data indicates that the emotional distress subscale presents an important difference between medians. At the end of the intervention, the patients emotionally evolved more favorably (P<0.02), considering their state of health, than when they began the therapy.	1. Throughout the group therapy, it was observed that the patients improved in all emotions and the global score of emotional distress compared to the situation before the therapy. 2. The improvement of the women with breast cancer, 20 women scheduled for surgery, ten were assigned to the control group, assessment of the quality of life are shown to be statistically significant. 3. The improvements observed in terms of decreased depression, anxiety and fear suggest that group therapy can be an alternative to that group therapy can be an alternative to psycho-pharmacological treatment. 4. Therapy is effective in recovering enthusiasm for things. 5. Anxiety, depression, and fear are the three items with the highest scores in the subscale before, during, and after treatment.

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...continuation Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Intervention (psychological approach or medical approach)	Medicines used if applicable.	Size of the effect	Effectiveness of therapy
		Sociodemographic with the following data: clinical history, up of therapy; and emotional presence and subscale of the QL-CA-Alex Quality of Life Questionnaire (Cronbach's Alpha of 0.816).				Starting from the 4 <sup>th</sup> session and throughout the therapy, different psychological topics are worked on that can be included in four modules: anxiety, depression, self-esteem and body image, emotional relationships and sexuality.			
(19)	Twenty women scheduled for surgery participated; ten were assigned to the control group and 10 to the experimental group. They were evaluated with the HADS and IDARE scales before and after the intervention, which consisted of psychoeducation, breathing training, and guided imagination.	Of women with breast cancer, 20 women scheduled for surgery, ten were assigned to the control group, and 10 to the experimental group. The sample was made up of 20 women between 33 and 67 years old, with an average age of 52 years, with a confirmed diagnosis of breast cancer, scheduled for surgery in the oncology service of the Hospital Juárez de México. The inclusion criteria were: 1) Patients with a confirmed diagnosis of breast cancer; 2) scheduled to perform a surgical procedure; 3) wait for the surgical procedure of at least two weeks;	Mexico	Doctors	Psychoeducation, breathing and imagination training Guided.	Cognitive-Behavioral Therapy	Not applicable	Although the results do not generally suggest statistically significant differences between the groups, they present a medium to high effect size, which can be attributed to the intervention. In the control group, anxiety scores in both instruments increased in the post-test. In contrast, they decreased in the experimental group, which may be related to the proximity of the surgical event.	These findings suggest that a short-term multicomponent intervention is effective in the hospital context, where people must face various situations that generate anxiety.

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...continuation Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Intervention (psychological approach or medical approach)	Medicines used if applicable.	Size of the effect	Effectiveness of therapy
		4) clinical identification of anxiety. On the other hand, patients who presented any of the following criteria were excluded: 1) illiterate people; 2)withrespiratory problems;3) with the presence of uncontrolled or untreated comorbidities;4) with identified depression; 5) with cognitive impairment due to illness or treatment; 6) with ongoing psychiatric treatment.							
(44)	The intervention design was one group sampled by convenience; tests were applied before and after treatment. To measure the variables, the HAD tests (Hospital Anxiety and Depression Scale), Whoqol Bref (perception of quality of life) and the CAEPO (stress coping questionnaire for cancer patients).	Fifteen patients with breast cancer who were inactive treatment were treated in the oncology area of "Dr. Ignacio Morones Prieto" from the state of San Luis Potosí, Mexico. Among the inclusion criteria are women over 30 years of age, diagnosed with breast cancer in a non-advanced stage, in the active treatment phase, are within the	Mexico	Psychologists	Cognitive-Behavioral Therapy	Cognitive behavioral therapy: psychoeducation, muscle relaxation, progressive, guided behavioral imagination, diaphragmatic breathing, self-recording, thoughts automatic, ABC-DE technique, thought stopping/ desensitization, systematic, solution from problems.	Not applicable	A greater effect was found in two quality-of-life dimensions: physical health and interpersonal relationships. Likewise, a greater global change was seen in the HAD scale and the two subscales.	The data demonstrates the effectiveness of treatment, and positive changes are revealed, both clinically and statistically, in emotional distress, mainly anxiety. Regarding the depression variable, although no difference was observed as statistically significant, they found a clinically significant reduction according to the cut-off points of the HAD scale.

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Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Size of the effect	Medicines used if applicable	Size of the effect	Effectiveness of therapy
(18)	A repeated measurements design was used pretest, posttest, and two-month follow-up. The study evaluated the effects of a cognitive-behavioral intervention on the coping styles and depressive symptoms of breast cancer patients undergoing modified radical mastectomy.	26 women over the age of Eighteen years old with a diagnosis of breast cancer, candidates for mastectomy surgery, were evaluated using the Brief Coping Inventory and the Hospital Anxiety and Depression Inventory (HADS).	Mexico	Doctor	Intervention based on psychoeducation, autogenic relaxation and cognitive restructuring, and problem-solving methods.	Cognitive-behavioral therapy.	Not applicable	At the end of the intervention, the results showed a significant effect on coping styles (p=0.03) and a significant reduction in anxious symptomatology (F=5.09, p=0.01). In contrast, no changes were observed in depressive symptomatology. Measurements.	Significant effect on anxious symptoms, without changes in depressive symptoms.
(40)	A 3-month randomized controlled trial with two post-treatment assessments was conducted on 200 breast cancer survivors assigned to 12 weeks of twice-weekly 90-minute Hatha Yoga classes or wait-list control.	Two hundred female survivors of stage 0 to III breast cancer. Women between the ages of 27 and 76. They had completed cancer treatment within the past three years and were at least two months postoperative from surgery or adjuvant therapy or radiation, whichever came last. Women were recruited through referrals from oncologists, community print and web advertisements, and breast cancer groups and events.	USA	Doctors	Hatha yoga-	Transpersonal psychology	Not applicable	Immediately after treatment, fatigue was not lower (P > 0.05), but vitality was higher (P = 0.01) in the yoga group compared to the control group. Three months after treatment, fatigue was lower in the yoga group (p = 0.002), vitality was higher (p = 0.01), and IL-6 (p = 0.027), TNF-α (p = 0.027), and IL-1β (P = 0.037) were lower for yoga participants compared to the control group. The groups did not differ in depression at any time point (P > 0.2).	The practice of yoga does not show improvements in depressive symptoms in the sample evaluated.

Continued in pag. 814...

EFFECTIVENESS OF COGNITIVE BEHAVIORAL THERAPY

...continuation Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Size of the effect	Medicines used if applicable	Size of the effect	Effectiveness of therapy
(17)	This was a randomized controlled trial comparing an MBCT intervention and wait-list control (WLC) in outpatients with non-metastatic breast cancer.	In this study, 74 participants were randomly assigned to the MBCT group (n=38) or the control group (n = 36). The average age of the participants was 53.7 years, ranging from 38 to 70. The majority were patients with stage I and II breast cancer—the average time since cancer diagnosis was approximately three years. There were no significant differences in the demographic and clinical characteristics of the participants between the intervention group and the control group. Eligibility criteria were as follows: 1) clinical diagnosis of stage 0 - III breast cancer, 2) age between 20 and 74 years, and 3) total score of five or more on the Hospital Anxiety and Depression Scale (HADS) 4) Eastern Cooperative Oncology Group performance status of 0e2, 5)	Japan	Psychiatrists, Psychiatric Nurses with experience in mindfulness and training in MBCT	Cognitive-Behavioral Therapy	The intervention group, comprising 38 participants, underwent an eight-week MBCT program (two hours per week) in a supportive group format. This program, which was a modified version of the original MBCT program, aimed to foster a sense of community among the participants, a unique aspect that contributed to its effectiveness. The program consisted of formal meditation exercises, psychoeducation based on cognitive therapy, and discussion and interaction between participants to facilitate their learning. Participants were assigned tasks in each session, which were supposed to last between 20 and 45 minutes daily. Participants received a compact disc with a meditation guide.	Not applicable	, with its participants, experienced a significantly greater improvement at week 8 in their psychological distress (anxiety and depression) compared to the control group. The difference in HADS total score was 7.82, with an effect size of Cohen's d=1.17, indicating the effectiveness of the MBCT intervention. This difference remained significant at 12 weeks, further reinforcing the positive impact of the MBCT program.	The study demonstrated that our MBCT intervention significantly reduced psychological distress (both anxiety and depression) in patients with non-metastatic breast cancer. The present study has some limitations. First, the study sample was relatively small and limited to outpatients with nonmetastatic breast cancer at a single center. Second, using a WLC instead of an active control weakens the robustness of the study. The effectiveness of our intervention may derive in part from the non-specific effect of group therapy.

Continued in pag. 815...

...continuation Table 1. Individual characteristics and results of the included studies (n = 11).

Authors, year of publication	Methodology	Sample selection	Geographical location	Training of the intervening professional	Type of therapy (Psychological /Pharmacological)	Size of the effect	Medicines used if applicable	Size of the effect	Effectiveness of therapy
		expected clinical prognosis of one year or more, 6) ability to communicate in Japanese, and 7) submission of written informed consent. Patients were excluded if they had experience with Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) or had any serious physical or psychiatric symptoms that prevented them from participating in the study.							

### Profession of therapists

Psychologists develop interventions exclusively in countries such as Mexico, France, and Spain (2,21,44). Some studies were carried out by doctors, as is the case in Mexico and the United States (18,19,40), and other clinical trials carried out in Iran, Puerto Rico, South Korea, and Japan were advanced by interdisciplinary teams in the health area made up of Doctors, Physiologists, Nurses, Psychologists and Physical Educators (12,17,43,22).

### Type of therapy, intervention, and approach

The majority of interventions were carried out from the Cognitive-Behavioral Therapy model (n=9) and covered techniques, variants and strategies such as Brief Behavioral Activation Therapy for Depression (BATD-R), psychoeducation, ABC-DE technique, thought stopping, cognitive restructuring, problem-solving method, breathing and guided imagination training, self-recordings, systematic desensitization, autogenic, muscular and progressive relaxation, diaphragmatic (2,12,13,17-22,44), the modality was face-to-face, group and individual.

Psychoeducation as a CBT tool represents a global, interdisciplinary approach that adds educational intervention to psychological support. It provides patients and their families with ideal and realistic knowledge about breast cancer, associated treatments, side effects, possible complications, and some hypotheses in terms of problem-solving (17,19,26,28-30,41,44).

Of the clinical trials with alternative treatments, such as Hatha yoga and Transpersonal Psychology, developed in the United States, the practice of yoga does not improve depressive symptoms in the sample evaluated by (40). A study developed by (43) in Korea indicated that Brain Wave Vibration meditation could be a positive and non-invasive intervention for breast cancer patients during radiotherapy in aspects such as anxiety, fatigue, and quality of life. Global; however, there were no positive effects on depression.

### DISCUSSION

CBT is based on the premise that human experience is facilitated by the interconnection between thoughts, emotions, physical sensations, and behaviors. Thoughts are highlighted as the prominent influence on a person's experience. The CBT model states that thoughts influence an individual's emotions and body sensations, which, in turn, impact their actions. CBT proposes that emotions cannot be directly influenced but can be changed by identifying and modifying the thoughts that are the source of the emotion. When challenging emotions or mental health conditions are present, such as anxiety or depression, CBT assumes that distorted thoughts are causing those feelings. If a person can modify those distorted thoughts or cognitions into alternative thoughts, then the levels of anxiety or depression can be reduced. CBT aims to teach people that controlling their thoughts, feelings, and behaviors is possible. CBT helps to challenge and overcome automatic beliefs and use practical strategies to change or modify behavior (2,12,17-22,44).

The objective of this review was to evaluate the effectiveness of cognitive-behavioral therapy (CBT) in the management of depression and/or anxiety in women with breast cancer. Eleven clinical trials were identified and conducted across four continents: Asia, Europe, South America, and North America. These trials mostly developed CBT-based interventions using a wide range of techniques such as behavioral activation (BA), psychoeducation, the ABC-DE technique, thought-stopping, cognitive restructuring, problem-solving methods, breathing, and imagination training. Techniques also included guided self-recordings, systematic desensitization, autogenic, muscular and progressive relaxation, and diaphragmatic breathing (2,12,17-22,44).

Behavioral Activation (BA) is one of the key CBT techniques used. It involves helping patients engage in activities that are aligned with their values and interests, aiming to increase positive reinforcement from the environment and reduce negative behaviors that contribute to depression

and anxiety. Of the CBT techniques used, BA shows statistically significant differences in the reduction of depressive and anxiety symptoms, with post-intervention clinical symptomatology in women with breast cancer decreasing significantly and reporting a large effect size (2,12).

For researchers (2,12,17-22,44), there is a preference for the use of CBT by psychologists and health professionals for the management of depression and anxiety in women with breast cancer, particularly with the use of BA. This therapy is preferred in Iran, Japan, Mexico, Puerto Rico, France, and Spain. It is noteworthy that, due to the need to strengthen social support networks in women with cancer, group therapy has proven to be very effective in reinforcing their emotional resilience regarding the disease and its treatment.

CBT is more effective for managing anxiety and depression in women with breast cancer than other types of therapies, such as those focused on Transpersonal Psychology, where no significant changes in mood, specifically depression, were evident (40).

Psychoeducation, as a process within the framework of CBT, allows women with breast cancer to understand the disease, promotes adherence to cancer treatment, reduces anxiety associated with the disease and side effects of treatment such as hair loss, feelings of weakness, drowsiness, dizziness, nausea, vomiting, and feelings of depression and despondency, while stimulating self-care and helping to improve mental health (6-10,13,14).

### **Limitations**

Bearing in mind that the systematic review was aimed at comparing the effectiveness of Cognitive Behavioural Therapy in women with breast cancer presenting depression and/or anxiety with other types of psychological and pharmacological therapies, no clinical trials of pharmacological treatments were found in the sample under study, which leaves room to explore different therapeutic possibilities beyond pharmacological treatment, oriented towards an interdisciplinary approach.

### **CONCLUSIONS**

Psychological interventions based on the CBT model decrease levels of depression and anxiety in women with breast cancer regardless of the technique, demonstrating a large effect size compared to transpersonal therapies. The reduced effectiveness of transpersonal therapies may be attributed to their focus on spiritual and existential aspects, which, while valuable, might not address the cognitive and behavioral patterns directly associated with depression and anxiety as effectively as CBT does. In various therapies, group work is prioritized due to the importance of social support networks for the patient and family.

Clinical trials should continue to be developed to evaluate the effectiveness of the psychological therapies used, and this type of study should be encouraged at the pharmacological level, as there is little evidence of the efficacy of drug treatment used for the management of depression and anxiety in breast cancer patients.

### **Authors' contribution**

LC-T and VB conceptualized the review, created objectives, and set inclusion criteria. MJN-D, MAL-C, LST, and LB conducted the database searches and all assessments according to the inclusion criteria. VB undertook the risk of bias assessment with MJN-D and LC-T, with ÁB-N writing the initial draft. LST and LB supervised the study and contributed to the analysis. VB and MAL-C contributed to the review and editing. LCT contributed to data analysis and interpretation. AB-N y JAN-V translated the manuscript. All authors participated in the interpretation of the data, critically reviewed the manuscript, and approved the final version for publication.

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