

Gamze Muz, PhD, RN
Aylin Bilgin, PhD, RN
Gülyeter Erdoğan Yüce, PhD, RN
Ayser Döner, RN

The Effect of Touch Therapy on Symptoms and Psychosocial Variables in Individuals Diagnosed With Cancer

A Systematic Review and Meta-analysis

KEY WORDS

Cancer
Psychological
Symptom
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Touch therapy

Background: Touch therapy is used in the control of physical and psychological symptoms in cancer patients. However, its effectiveness has not been well studied. **Objectives:** The aim of this study was to examine the effectiveness of touch therapy intervention on symptoms and psychosocial factors for patients with cancer. **Method:** Four electronic databases were used to identify all experimental studies that examine the effects of touch therapy on symptoms and psychosocial factors for patients with cancer. The standardized mean differences between groups in levels of symptoms and psychosocial factors for postintervention were computed for each study. **Result:** The pooled results suggest that touch therapy intervention effectively reduces pain, fatigue, anxiety, and negative mood among patients with cancer postintervention. However, touch therapy intervention did not affect the quality of life and stress. **Conclusion:** A significant effect of touch therapy was the reduction of physical and psychological symptoms in cancer patients. **Implications for Practice:** Touch therapy could be safely integrated into the clinical practice of patients with cancer.

Cancer is a significant public health problem because it is the world's second cause of death after cardiovascular diseases.^{1,2} Patients require long-term care because of numerous symptoms, such as pain, sleep problems, fatigue, anxiety, depression, and stress.^{3,4} The use of complementary healthcare interventions and

nonpharmacological treatment is increasing in managing symptoms, as is the integration of mind/body therapies and natural products with traditional treatments, also known as integrative oncology.⁵⁻⁷ Among these therapies, touch therapies are energy-based complementary therapies that include therapeutic touch, healing touch, and Reiki.⁷

Author Affiliations: Semra ve Vefa Küçük Faculty of Health Sciences, Nevşehir Hacı Bektaş Veli University, Nevşehir (Dr Muz); Sakarya University of Applied Sciences Faculty of Health Sciences, Sakarya (Dr Bilgin); Faculty of Health Sciences, Aksaray University, Aksaray (Dr Erdoğan Yüce); and Erciyes University, Faculty of Health Sciences, Kayseri, Turkey (Mrs Döner).

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Correspondence: Gamze Muz, PhD, RN, Nevşehir Hacı Bektaş Veli University, Nevşehir 50300, Turkey (gamzeucakan@gmail.com).

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Touch therapies have been included in nursing practice since the time of Florence Nightingale. Modern nurse theorists such as Martha Rogers and Jean Watson described the importance of interaction with the environment in human energy fields and that these therapies should be in nursing practices.^{8–11} Although massage interventions in the literature are considered within the scope of manual therapies, touch therapies applied with or without touching energy points differ from traditional massage interventions in that they provide healing by using the energy flow in the body.¹² Because this energy field extends beyond the skin, physical contact is not always necessary to perform touch therapies.¹² Touch therapies affect both the recipient and the practitioner alike and allow for a human connection. These concepts, defined as touching with the intention of healing, represent holistic care in nursing.⁸ In addition, the nursing diagnosis of an “imbalanced energy field” has been classified by The North American Nursing Diagnosis Association.¹³ Touch therapies have been reported to be effective in accelerating healing, controlling pain, managing symptoms, reducing stress and anxiety, controlling negative emotions, and providing relaxation.^{7,8,14} Aghabati et al¹⁵ reported that touch therapy relieves pain and fatigue in patients with cancer receiving chemotherapy. Another study reported that Reiki practice might improve well-being and quality of life in patients with blood cancer.¹⁶ Jackson et al¹⁷ reported that touch therapy effectively reduced patients with cancer’s physical and psychological symptoms. Cook et al¹⁸ reported that healing touch increases well-being in patients who received radiotherapy for cervical and breast cancer. In sum, touch therapy has positive effects on patients with cancer and has been in use since the 1970s with Krieger’s contributions to the literature.¹⁹

The objectives of this systematic review and meta-analysis were to (1) identify the effects of different touch therapies on symptom management of patients with cancer, (2) describe the effects of different touch therapies on certain psychosocial variables, and (3) estimate the methodological quality and level of evidence of the studies involved in this meta-analysis and provide evidence-based recommendations for different touch therapy interventions.

■ Methods

Design

This study followed the Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) guidelines.²⁰

Inclusion and Exclusion Criteria

The PICOS (P: population, I: interventions, C: comparators, O: outcomes, S: study designs) approach was used to create the research question and identify the keywords.²¹ The study participants (P) were patients with cancer older than 18 years. Interventions (I) included Reiki, healing touch, and therapeutic touch therapies applied to patients with cancer. Standard care, placebo, yoga, or resting methods were applied to the control (C) group. The outcome variables of the study included symptoms and psychosocial variables. The primary outcomes were symptoms such

as fatigue and pain. Secondary outcomes, psychosocial variables, included anxiety, mood, stress, and quality of life. The studies included in this meta-analysis were randomized controlled (RCT) and nonrandomized controlled (NRS) designed (S) studies. According to the PICOS strategy, the research question was “What is the effect of touch therapies on symptoms and psychosocial variables in patients with cancer?” Studies that met at least 1 of the following criteria were excluded: (1) written in other languages than English; (2) abstracts/posters; (3) a nonreported mean and standard deviation values of measured variables; (4) published in non-peer-reviewed journals; (5) theses, letters, committee reports, conference proceedings, short papers, and expert opinions; and (6) systematic reviews and meta-analyses.

Search Strategy

The databases ScienceDirect, Web of Science, PubMed, and Cochrane Central Register of Controlled Trials (CENTRAL) were searched using keywords adapted to each database. Four databases were used because CENTRAL provides information about randomized controlled trials; PubMed is one of the most widely accessible resources in the world; ScienceDirect combines scientific, technical, and health publications with smart, intuitive functionality; and Web of Science is one of the most reliable global databases in the world.

Studies published between January 2000 and May 2022 were considered. The searches were performed with the following keywords/Mesh combinations: “Healing Touch,” “Therapeutic Touch,” “Touch Therapy,” “Reiki,” “Cancer,” “Neoplasm,” “Radiotherapy,” “Chemotherapy,” “Oncology,” “Tumor.” In addition, combining keywords/medical subject headings (Mesh) was applied for each database using the ‘OR’ and ‘AND’ and tool ‘*’ enhancing search by allowing word variation (see Supplementary Material, <http://links.lww.com/CN/A104>).

Data Extraction

Search results were loaded into reference management software (Mendeley, Elsevier, Amsterdam, the Netherlands). Duplicate references were removed, and the remaining studies were evaluated independently by 2 researchers by title and abstract, considering inclusion and exclusion criteria. Full texts of the remaining studies were obtained to decide whether to include them. All researchers reviewed the full texts of the remaining studies in detail, and a consensus was reached to determine whether they should be included in the meta-analysis.

Data from studies independently reviewed by the authors were extracted into a data collection form. Extracted data included author, publication year and country, methodological design, type of patients, inclusion criteria, characteristics of participants (age, gender), number of participants, intervention strategy, control strategy, data collection method, and results.

Assessment of Methodology Quality

The quality of the studies was critically evaluated for accuracy, reliability, and relevance using the Quality Assessment Tool for

Quantitative Studies (QATool).²² The QATool involves 8 areas: selection bias, confounder, study design, data collection method, blinding, exclusion, and withdrawal from the study integrity of intervention and analysis. Each area is scored (1 = strong, 2 = moderate, 3 = weak), and the study is given a general score. If there are no weak ratings, the study is considered methodologically strong; if there is 1 weak rating, the study is considered moderately strong; and if there are 2 or more weak ratings, the study is considered weak.^{22,23} The QATool was applied independently by 4 researchers. After scoring, researchers reviewed the results together to reach a consensus.

When conducting systematic reviews and meta-analyses, assessing the quality of primary studies is essential to avoid bias. It is highly dependent on the quality of the studies identified to estimate the pooled effect in the meta-analysis. Selection bias, reporting bias, detection bias, attrition bias, performance bias, and other types of bias significantly affect meta-analysis results. The Cochrane Collaboration's Bias Risk Assessment Tool (RoB) was used to assess the bias of studies.²⁴ The Cochrane risk-of-bias tool consists of 7 areas, which are randomization (selection bias), allocation concealment (selection bias), blinding of participants and staff (performance bias), blinding of outcome evaluation (detection bias), incomplete outcome data (qualitative bias), selective reporting (reporting bias), and other bias. In addition, the risk of bias is assessed as low risk (-), uncertain (?), or high risk (-). The Risk of Bias Assessment Tool for Nonrandomized Studies (RoBANS) was used for nonrandomized controlled studies, including quasi-experimental studies with a control group, crossover pilot trials, and non-RCTs.²⁵ Four researchers independently assessed the risk of bias in each study. Disagreements were clarified by discussion.

Data Synthesis and Analysis

Stata 15.0 software (Stata Corp, College Station, Texas) was used to analyze the data. The heterogeneity of the studies was evaluated with Cochran Q , I^2 (range from 0% to 100%), and Tau-squared statistics. The fixed effects model was utilized for $I^2 \leq 50\%$ and $P > .01$. The random effects model was applied if $I^2 > 50\%$ and $P < .01$.²⁶ Because the included studies used different measurement tools, standard mean difference, 95% confidence intervals (CIs), and forest plots to synthesize the data, the overall effect size was calculated by averaging the Cohen d values. Cohen d value was transformed to a z value to evaluate statistical significance. Publication bias was evaluated with a funnel plot and Egger test.²⁷

Results

Search Outcome

A total of 1180 studies were retrieved through the electronic databases, and 235 were removed because of duplication; 915 studies were excluded using titles and abstracts. The remaining 30 studies were evaluated according to the inclusion criteria, and 18 studies were excluded because of duplicate records ($n = 2$),

descriptive and qualitative studies ($n = 6$), and studies not suitable for meta-analysis because of the assessment methods ($n = 10$). Finally, 12 studies were included in this systematic review and meta-analysis (Figure 1).

Studies Characteristics

Of the 12 studies, 5 were conducted in the United States,^{28–32} 3 in Turkey,^{33–35} 2 in Iran,^{36,37} 1 in Italy,³⁸ and 1 in Canada.³⁹ Eight studies were designed as RCTs,^{28–31,35–38} and 4 were non-RCTs.^{32–34,39} All participants in the studies were diagnosed with cancer. The total number of participants was 1073, and the sample size of the studies ranges from 14 participants²⁸ to 226 participants.³¹ Three studies included only women in their sample, whereas 1 study was conducted with only 26 men (Table 1). The remaining studies included both genders. Sessions of the intervention ranged from 1 to 14. Seven studies applied Reiki as an intervention,^{28,32–35,38,39} 3 used healing touch,^{29–31} and 2 used therapeutic touch.^{36,37} Touch therapies were practiced at any time during treatment in 7 of 12 studies,^{29–31,33–35,37} before surgery in 1 study,³⁸ after treatment in 2 studies,^{36,39} and before, during, and after treatment in 1 study.³² In 1 study, the timing of its practice is uncertain²⁸ (Table 2).

Quality Assessment and Risk of Bias Evaluation

QUALITY ASSESSMENT

The quality of the studies was assessed through the QATool. The global rating of only 1 study was assessed as “strong,”²⁹ whereas 3 studies were rated as “moderate” quality.^{28,30,33} The remaining studies ($n = 8$)^{31,32,34–39} were rated as “weak” owing to unlimited confounders, no randomization, no blinding, high withdrawal, and dropout rates (Table 3).

RISK OF BIAS

Eight studies evaluated with the RoB reported randomization, but 1 study did not provide information on this issue.^{28–31,35–38} Two studies (25%) emphasized that they blinded participants.^{29,35} Four studies (50%) indicated that they did not blind participants because it was difficult blinding owing to the nature of the healing touch.^{28,30,31,38} It was unclear whether participants were blinded in 2 studies (25%).^{36,37} Only 1 study followed a blinded assessor,²⁹ securing that outcome assessment was blinded, whereas the remaining ones had unclear risks or detecting bias with high risks. Attrition bias in all studies was low, with either clear reasons for missing or complete trial data. There was no evidence for reporting bias in most of the studies.^{28,29,31,35–38} However, 1 study stated that it could not evaluate psychological measures for the control group, which may have caused a high bias in reporting.³⁰ Regarding other biases, 6 studies (75%) were considered low risk,^{28–31,37,38} whereas the risk was unclear in 2 of the studies (25%)^{35,36} (Table 4, Figure 2).

Four studies were assessed with the RoBANS.^{32–34,39} All the included studies had adequate information about participants' comparability, exposure measurement, incomplete outcome data, outcome evaluation, and selective outcome reporting.

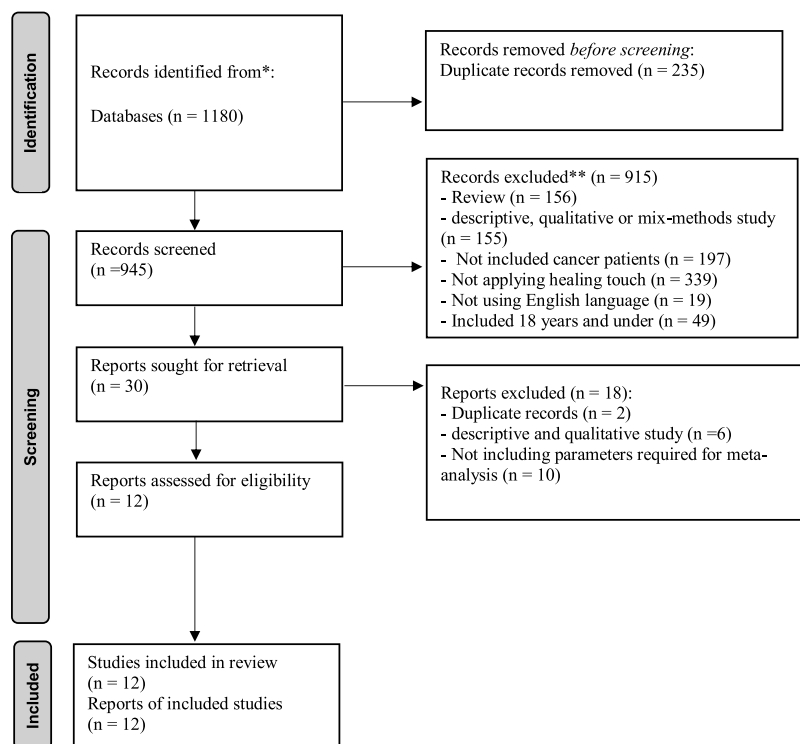


Figure 1 ■ PRISMA flow diagram.

However, in the blinding outcome assessment, 2 studies (50%)^{32,39} had unclear bias and 2 studies (50%)^{33,34} had a high bias. Concerning the confounding variables, half of the studies had a high bias.^{32,39} Two studies had a high bias in addressing the selection of participants.^{32,33}

Effects of Touch Therapies on Primary Outcomes of Patients With Cancer

PAIN

Five studies in the meta-analysis showed the effects of touch therapies on pain, and the pooled data involved 407 patients (intervention = 201 vs control = 206).^{31–33,35,39} A fixed-effects model was used as these studies had a low heterogeneity ($I^2 = 24.0\%$; $P = .261$). The meta-analysis showed that touch therapy had a small effect on reducing pain levels (pooled effect size = -0.213 , 95% CI = -0.409 to -0.017) according to the control group. Egger and Begg tests were used for sensitivity analysis and revealed no publication bias (Egger test: $t = -1.26$, $P = .297$; Begg test: $z = -0.49$, $P = .624$). In addition, publication bias was presented with the funnel plot (Figure 3).

FATIGUE

Seven studies in the meta-analysis showed the effects of touch therapies on fatigue, and the pooled data involved 528 patients (intervention = 262 vs control = 266).^{29,31,33–35,38,39} A random-effects model was used as these studies had a high heterogeneity ($I^2 = 95.9\%$; $P < .001$). The meta-analysis showed that the touch therapy group had significantly reduced fatigue

levels (pooled effect size = -1.178 , 95% CI = -2.215 to -0.141) according to the control group. Egger and Begg tests were used for sensitivity analysis and revealed no publication bias (Egger test: $t = -0.50$, $P = .635$; Begg test: $z = -0.75$, $P = .453$). In addition, publication bias was indicated in the funnel plot (Figure 4).

OTHER PRIMARY OUTCOMES

Meta-analysis was impossible because the number of studies was too small for some variables. However, when we examined these studies from a systematic perspective, Clark et al²⁸ showed that healing touch did not change the level of neurotoxicity ($P = .177$). On the other hand, Rosenbaum and Velde³² stated that the general health status of the participants improved statistically significantly after the healing touch ($P < .001$). Tabatabaee et al³⁶ emphasized a significant change in the participants' activity level, walking ability, and sleep scores after the healing touch ($P = .001$). Vanaki et al³⁷ stated that the nausea of the participants decreased statistically significantly after the healing touch ($P < .001$) (Table 5).

Effects of Touch Therapies on Secondary Outcomes of Patients With Cancer

MOOD

Four studies in the meta-analysis showed the effects of touch therapies on mood, and the pooled data involved 423 patients (intervention = 210 vs control = 213).^{31,32,36,38} A random-effects model was used as these studies had a high level ($I^2 = 93.4\%$) and

Table 1 • Characteristics of the Reviewed Studies

Study (Year)	Country	Study Design	Type of Patients	Inclusion Criteria	Sample	Age (Mean ± SD)	Gender
Buyukbayram and Ciritik Sirtas (2021) ³³	Turkey	Nonrandomized controlled trial	Cancer patients undergoing treatment	-No audiovisual impairment -Able to read and write Turkish -Those who stayed in the hospital for at least 3 days and who are ≥5 according to the VAS	Reiki group = 60 Guided imagery = 60 Control = 60	Reiki = 51.75 ± 13.77 Guided imagery = 47.86 ± 14.00 Control = 50.93 ± 13.99	Reiki Female = 45% Male = 55% Control Female = 45% Male = 55%
Chirico et al (2017) ³⁸	Italy	Randomized controlled trial	Preoperative breast cancer patients	-Patients who have not previously received adjuvant chemotherapy or any other cancer treatment (ie, surgery or radiotherapy) -Had to be 18 years old	Experimental = 55 Control = 55	43.69 ± 10.01	Female = 40% Male = 60%
Clark et al (2012) ²⁸	United States	Randomized controlled trial	Chemotherapy-induced peripheral neuropathy	-Have persistent symptoms of chemotherapy-induced peripheral neuropathy lasting ≥3 months -Have completed chemotherapy that included 1 or more of the taxane, vinca alkaloid, or platinum classes of chemotherapies for a cancer diagnosis at least 3 months -Being willing to be part of the study	Experimental = 7 Control = 7	59.04 ± 8.56	Female = 88.5% Male = 11.5%
Demir et al (2015) ³⁵	Turkey	Randomized controlled trial	Cancer patients undergoing treatment	-Had at least a primary school education -Patients with cancer at any stage and receiving any kind of chemotherapy	Experimental = 8 Control = 10	Experimental = 38.62 ± 19.50 Control = 28.70 ± 8.88	Female = 38.8% Male = 61.1%
FitzHenry et al (2014) ²⁹	United States	Randomized controlled trial	Breast cancer patients undergoing radiation therapy	-Participants were recruited from a single radiation oncology clinic in an academic medical center. -Included histologically proven breast cancer surgically treated with lumpectomy or mastectomy -Aged 21 to 75 years -Had an Eastern Cooperative Oncology Group (ECOG) performance status of 0, 1, or 2 -Between 18 and 54 years of age	Experimental = 21 Control = 20	51.5 ± 9.2	Female = 100%
Karaman and Tan (2021) ³⁴	Turkey	Nonrandomized controlled trial	Breast cancer patients undergoing chemotherapy	-Previously received a minimum of 1 course of adjuvant chemotherapy and would receive at least 3 more courses of treatment	Experimental = 35 Control = 35	25–35 years old: 6 (17.1%) for the experimental group, 3 (8.6%) for the control group 36–45 years old: 13 (37.1%) for the experimental group, 16	Female = 100.0%

(continues)

Table 1 • Characteristics of the Reviewed Studies, Continued

Study (Year)	Country	Study Design	Type of Patients	Inclusion Criteria	Sample	Age (Mean ± SD)	Gender
Lu et al (2016) ³⁰	United States	Randomized controlled trial	Patients undergoing stem cell transplantation	<ul style="list-style-type: none"> –Did not have a psychiatric diagnosis –Obtained 1 to 10 points on the Piper Fatigue Scale –18 years or older –Undergoing auto or related allogeneic stem cell transplantation –Those who did not have a history of mental illness and were able to give consent and complete questionnaires 	HT = 13 Relaxation therapy = 13 Control = 20	(45.7%) for the control group 46–55 years old: 14 (40.0%) for the experimental group, 13 (37.1%) for the control group 56–65 years old: 2 (5.8%) for the experimental group, 3 (8.6%) for the control group HT = 57.62 ± 7.67 Relaxation therapy = 55.77 ± 5.56 Control = 57.25 ± 7.25	Female = 56.5% Male = 43.5%
Post-White et al (2003) ³¹	United States	Randomized controlled trial	Cancer patients undergoing chemotherapy	<ul style="list-style-type: none"> –Historically documented cancer diagnosis and were receiving chemotherapy with an identical repeating cycle for ≥2 remaining cycles –They also had pain, nausea, or fatigue rated ≥3 on a scale of 0 to 10 (where 10 is the worst imaginable). –Being able to read and write English 	Massage = 78 HT = 77 Control = 75	54.7 ± 11.2	Female = 86.1% Male = 13.9%
Rosenbaum and Velde (2016) ³²	United States	Nonrandomized controlled trial	Cancer patients—before, during, and after treatment	<ul style="list-style-type: none"> –Patients with cancer who self-enrolled in yoga, massage, and Reiki services during a 6-month period 	Yoga = 50 Massage = 50 Reiki = 50	-	Female = 91% Male = 9%
Tabatabaee et al (2016) ³⁶	Iran	Randomized controlled trial	Cancer patients with remission	<ul style="list-style-type: none"> –Male patients aged 20–65 years; being conscious –Having cancer-related pain confirmed by physician –Being diagnosed and treated at least for 1 year –Being in remission stage –No plan for surgery as treatment during the intervention –No history of using TT –Completed chemotherapy treatment, understood English –Were currently living at home –Having a score of ≥3 or higher on the ESAS tiredness questionnaire item –Follows patient with or without metastases (excluding central nervous system metastases and metastases to the gastrointestinal tract, which can cause nausea 	TT = 30 Placebo = 30 Control = 30	TT = 54.00 ± 9.21 Placebo = 53.60 ± 8.51 Control = 55.93 ± 6.47	Male = 100%
Tsang et al (2007) ³⁹	Canada	Nonrandomized controlled trial	Cancer patients with remission	<ul style="list-style-type: none"> –Completed chemotherapy treatment, understood English –Were currently living at home –Having a score of ≥3 or higher on the ESAS tiredness questionnaire item –Follows patient with or without metastases (excluding central nervous system metastases and metastases to the gastrointestinal tract, which can cause nausea 	Reiki = 8 Resting control = 8	59 ± 15.23	Female = 81.3% Male = 18.7%
Vanaki et al (2016) ³⁷	Iran	Randomized controlled trial	Breast cancer patients undergoing treatment	<ul style="list-style-type: none"> –Follows patient with or without metastases (excluding central nervous system metastases and metastases to the gastrointestinal tract, which can cause nausea 	TT = 36 Placebo = 36 Control = 36	49.7 ± 9.2	Female = 100%

(continues)

Table 1 • Characteristics of the Reviewed Studies, Continued

Study (Year)	Country	Study Design	Type of Patients	Inclusion Criteria	Sample	Age (Mean ± SD)	Gender
				and vomiting) –Having the same drug regimen in all 3 groups (cyclophosphamide, epirubicin, and antiemetic drugs: dexamethasone, Plasil, Kitril, and Emend) –No concurrent radiotherapy and having experienced at least 1 course of chemotherapy and chemotherapy-induced nausea and vomiting			

Abbreviations: ESAS, Edmonton Symptom Assessment Scale; VAS, visual analog scale.

significant heterogeneity ($P < .001$). The meta-analysis showed that the touch therapy group had significantly reduced negative mood levels (pooled effect size = -1.034 , 95% CI = -1.857 to -0.210) according to the control group. Egger and Begg tests were used for sensitivity analysis and revealed no publication bias (Egger test: $t = -3.59$, $P = .069$; Begg test: $z = -1.36$, $P = .174$). In addition, publication bias was presented with the funnel plot (Figure 5).

ANXIETY

Four studies in the meta-analysis showed the effects of touch therapies on anxiety, and the pooled data involved 379 patients (intervention = 188 vs control = 191).^{31,32,38,39} A random-effects model was used as these studies had a high heterogeneity ($I^2 = 82.7\%$; $P = .001$). The meta-analysis showed that the touch therapy group had significantly reduced anxiety levels (pooled effect size = -0.553 , 95% CI = -1.097 to -0.009) according to the control group. Egger and Begg tests were used for sensitivity analysis and revealed no publication bias (Egger test: $t = -0.19$, $P = .868$; Begg test: $z = -0.68$, $P = .497$). In addition, publication bias was detected in the funnel plot (Figure 6).

STRESS

Two studies in the meta-analysis showed the effects of touch therapies on stress, and the pooled data involved 118 patients (intervention = 58 vs control = 60).^{32,35} A random-effects model was used as these studies had a high heterogeneity ($I^2 = 90.1\%$; $P = .002$). The meta-analysis result showed that touch therapy did not affect stress levels (pooled effect size = -0.830 , 95% CI = -2.729 to 1.070) according to the control group. Begg test was used for sensitivity analysis and revealed no publication bias (Begg test: $z = -1.00$, $P = .317$). In addition, publication bias was found in the funnel plot (Figure 7).

QUALITY OF LIFE

Five studies in the meta-analysis showed the effects of touch therapies on quality of life, and the pooled data involved 241 patients (intervention = 121 vs control = 120).^{28,29,32,34,39} A random-effects model was used as these studies had a high heterogeneity ($I^2 = 97.6\%$; $P < .001$). The meta-analysis result showed that touch therapy did not affect stress levels (pooled effect size = 1.299 , 95% CI = -1.200 to 3.797) according to the control group. Egger and Begg tests were used for sensitivity analysis and revealed no publication bias (Egger test: $t = 0.89$, $P = .441$; Begg test: $z = 1.47$, $P = .142$). In addition, publication bias was found in the funnel plot (Figure 8).

OTHER SECONDARY OUTCOMES

Meta-analysis was impossible because the number of studies needed to be increased for some variables. However, when we examine these studies from a systematic perspective, Clark et al²⁸ showed that healing touch did not change the level of psychological distress ($P = .474$). Tabatabaee et al³⁶ stated that the relationship between other people and the participants changed statistically significantly after the healing touch ($P = .001$). Chirico et al³⁸

Table 2 • Intervention Strategies and Results of the Reviewed Studies

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment	
							Times	Results
Büyükbayram and Çitlik Sarıtaş (2021) ³³	Reiki	25–30 minutes once a day for 3 days, 3 sessions	The administration of Reiki aims to maintain energy flow and heal by putting the hands of the practitioners or holding them 2–3 cm above patients' troubled areas. In this study, the researcher put her hands 2–3 cm above the body without touching the patient's body. The patients lay down in a supine position in their beds and Reiki was applied without touching the affected areas of illness for a period of 5 minutes. Reiki was also applied to other areas, including the head, eye, neck, chest, abdominal cavity, inguinal, and legs areas that correspond to the chakra regions that are responsible for providing the body's energy flow for an average of 3 minutes.	Usual Care	Reiki practitioner trained in Reiki's Usui line (degree 2) and a nurse with a master's degree in medical nursing.	-VAS for pain -Piper Fatigue Scale	-Pretest -Posttest	Reiki interventions reduced pain and fatigue
Chirico et al (2017) ³⁸	Reiki	1 day, 1 session	The intervention group applied Reiki, which lasted an average of 60 minutes, 1 day before the surgical procedure.	Usual care	Reiki practitioner	-Cancer Behavior Inventory Brief Form (Italian version) -Mood State (tension/anxiety, depression/	-Pretest -Posttest	Reiki has a positive effect on self-efficacy for coping with cancer, anxiety and, mood in coping with cancer.

(continues)

Table 2 • Intervention Strategies and Results of the Reviewed Studies, Continued

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment Times	Results
Clark et al (2012) ²⁸	Reiki	6 weeks, 5 sessions	The sessions took place in a quiet room. Each session was initiated with a brief conversation between the participant and the Reiki master. The participant would lie on a massage table, fully clothed, in a supine position. Working from the head toward the feet, the practitioner placed their hands either on or above the participant, pausing for a few moments at 7 designated locations, reflecting the chakras, to channel energy from their hands to the participant. The participant was asked to roll into a prone position and the process was repeated. On reaching the feet for a second time, the session was concluded.	Each week during the study, participants took part in a 1-hour class that focused on the biological, psychological, and social components of chemotherapy-induced peripheral neuropathy. Topics for each session were presented by an oncology nurse educator, oncology social worker, or registered dietician.	~5 Reiki practitioners who shared the same training and used similar approaches provided Reiki sessions	dejection, anger/hostility, vigor/activity, fatigue/inertia, and confusion/bewilderment -STAI -BSI-18 -FACT-GOG-NTX -MAAS	-Pretest -Posttest	Experimental group participants demonstrated an improvement in within-group scores on quality of life and neurotoxicity outcomes after intervention. Neurotoxicity worsened significantly in the control group.
Demir et al (2015) ³⁵	Reiki	5 days, 5 sessions	In distant Reiki, Reiki practitioners followed the traditional Usui	Participants received usual medical care during their stay.	Reiki practitioner located over 8 km away, who was trained in the Usui	-VAS (10 cm): pain, stress, fatigue	-Pretest -Posttest	The control group demonstrated greater levels of pain, stress, and fatigue <i>(continues)</i>

Table 2 • Intervention Strategies and Results of the Reviewed Studies, Continued

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment Times	Results
FitzHenry et al (2014) ²⁹	HT	A week, 7 sessions	<p>Reiki protocol for distant healing. Reiki practitioners first undertake the name of the patient and then send the healing energy to the patient. The participants received usual care and 5 distant Reiki sessions, 1 each night a day for 30 minutes.</p> <p>The practitioner would use the standard HT techniques of magnetic passes, chakra connection, and wound sealing to attempt to return the participant's energy field to a more uniform state. Magnetic passes involve the HT provider making gentle sweeping motions from head to foot. The chakra connection involves the provider holding his/her hands above the sole of the feet, ankles, knees, hips, tail bone, sacral plexus, solar plexus, sternum, throat, brow, and crown in turn until the provider senses that the energy movement beneath each hand is similar. The provider did magnetic passes with the prescribed gentle repetitive sweeping</p>	<p>The sham practitioners walked around the participant but did not place their hands or arms over the participant's body. They were instructed not to allow their hands or arms to come within 12 in of the sides of the participant but to hold their arms still or move them randomly. Sham practitioners were given no directions on what to think or any mental activities.</p>	<p>line of Reiki (degree 2) and has been practicing Reiki for over 4 years</p> <p>Certificate training was recruited to provide the HT treatments. Each practitioner was widely known in the local HT community as an excellent healer. Each had a minimum of 1 year of active HT practice.</p>	<p>–BFI –FACT-B</p>	<p>–Pretest –Posttest</p>	<p>fatigue. The Reiki group pain score, stress score, and fatigue score were also significantly lower.</p> <p>There was no beneficial effect of HT on fatigue or quality of life.</p>

(continues)

Table 2 • Intervention Strategies and Results of the Reviewed Studies, Continued

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment	
							Times	Results
Karaman and Tan (2021) ³⁴	Reiki	6 sessions	movements from neck to toe. While the patient was receiving chemotherapy, each of the 14 Reiki hand positions was applied sequentially. Each of the hand positions took 3 minutes, requiring 42 minutes in total.	Usual care	The researcher, a second-degree Reiki therapist, performed the Reiki therapy.	-Piper Fatigue Scale -EORTC QLQ-C30	-Pretest -Posttest after each of 3 chemotherapy sessions	The quality of life of patients who received Reiki increased, their general function levels increased, they experienced fewer symptoms, and their perceived fatigue levels were reduced.
Lu et al (2016) ³⁰	HT	2 weeks, 14 sessions	The HT treatment group received a daily (7 per week) HT session in their room starting the day after receiving their stem cell transplant. Each session included the following 4 HT techniques: (1) pain drain, (2) Chakra connection, (3) magnetic clearing, and (4) mind clearing. The average time for HT sessions was reduced from 24 minutes during week 1 to less than 20 minutes by the end of the second week.	Usual care (the support services available to all included nutritional and hydration support, pain management, protective isolation, physical rehabilitation therapy, recreational therapies, and mental health and pastoral counseling)	Each session was conducted by a team of 2 certified HT practitioners, at least 1 of whom was a nurse. Each session was conducted by a graduate clinical psychology student trained in relaxation protocols.	-Psychosocial Assessments -POMS -FACT-BMT -CES-D -FACT-G	-Pretest -Posttest	The HT and RT interventions produced improvement in psychosocial measures.
Post-White et al (2003) ³¹	HT	4 weeks, 8 sessions	HT followed the protocol developed by HT International Levels 1-3, using both touch and no touch techniques. Energy techniques included centering, unruffling, magnetic unruffling, full body connection,	Participants were instructed to remain clothed and to lie for 45 minutes on the same table used for the HT sessions. The same relaxing music was played softly during the session. One of the HT therapists sat with the	Certified and credentialed HT practitioners who also were registered nurses.	-BPI -BNI -POMS	-Pretest -Posttest	HT lowered fatigue and lowered total mood disturbance. Pain ratings were lower after HT. There were no effects on nausea. HT is more effective than presence alone or standard care in reducing pain, mood

(continues)

Table 2 • Intervention Strategies and Results of the Reviewed Studies, Continued

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment	
							Times	Results
			mind clearing, chelation, and lymphatic drain to modulate the energy field. The session began with the therapist setting the intent for the greatest good of the subject and performing an energy field assessment to determine areas of increased or decreased energy flow. Unruffling was done over the body to release areas of blocked energy and was followed by 1 or more of the other techniques, depending on the individual assessment. The session ended with a grounding technique for the subject. Subjects remained clothed, except for the removal of shoes.	participant during the presence session. The purpose was to be attentive and caring but to avoid therapy or physical intervention.				disturbance, and fatigue in patients receiving cancer chemotherapy.
Rosenbaum and Velde (2016) ³²	Reiki	1 day, 1 session				–Stress, pain, anxiety, mood, overall health, and quality of life were measured on a 10-point Likert-type scale ranging from 0 to 10.	–Pretest –Posttest	All 3 services helped decrease stress and anxiety, improve mood, and enhance cancer center patrons' perceived overall health and quality of life in a similar manner. Reiki reduced the pain of patients with cancer to a greater extent than either massage or yoga. The results of the study showed that TT had a positive impact on the positive management of (continues)
Tabatabaee et al (2016) ³⁶	TT	4 weeks, 7 sessions	The patients were taken to a quiet room and those accompanying them could also join them.	For participation in the control group, the practitioner did not do any intervention except	Researcher in TT, who had undertaken a specific 7-month TT course	–BPI	–Pretest –Posttest	

Table 2 • Intervention Strategies and Results of the Reviewed Studies, Continued

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment Times	Results
Tsang et al (2007) ³⁹	Reiki	1 week, 5 sessions	The patients were asked to close their eyes and start breathing slowly and deeply and not to think about anything. Then, the therapist focused and kept his hands at a distance of 5–10 cm from the patient's body and began to explore the energy field and aura around the patient's body so that he could search for energy deficit or energy increase in the patient's energy field. In the second stage, the therapist would move his hand from the head to the feet and perform cleansing to compensate for the energy deficit, to burn off the accumulated negative energy, and to develop an alternative positive energy. In the third stage, the therapist focuses his hands on specific areas of the body and transfers positive energy to the patient through his hands. TTs took between 10 and 15 minutes.	routine interventions in the ward. All groups received the same standard medical care.	Reiki practitioner	-FACT-F -FACT-G -ESAS	-Pretest -Posttest	Fatigue decreased within the Reiki condition over the course of all 7

(continues)

Table 2 • Intervention Strategies and Results of the Reviewed Studies, Continued

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment Times	Results
Vanaki et al (2016) ³⁷	TT	1 day, 1 session	<p>was to be followed by a no-treatment period to assess the longevity of any effects (washout period, up to 1 week) and finally 2 more sessions to give another boost to energy levels. The amount of time varied for each Reiki session, as determined to be appropriate by the Reiki master, but on average, sessions were approximately 45 minutes.</p> <p>The patient should close her/his eyes, relax, not think about any things, and take slow deep breaths. After preparation, the practitioner passes the hands, beginning at the patient's head and moving to the feet and then beginning at the patient's head and moving to the sacrum, 12–15 cm above the body, palm facing down, one time to become familiar with the character of the patient's energy field and then makes a second pass to assess for specific disruptions in the patient's human energy field, including</p>	<p>approximately 45 minutes each day for 5 days.</p> <p>In the placebo group, the repeated procedure was exactly the same as the TT group and was performed on the same day, but the practitioner's hands-to-patient's body distance was different (>20 cm) and in fact there was no energy transfer. The control group received no intervention.</p>	TT practitioner	<p>–100-mm visual analog scale for nausea severity –A chart to record duration and frequency of nausea at 4 times (morning, noon, evening and night) during the acute phase</p>	<p>Posttest</p> <p>Intensity of nausea was significantly lower in the test group.</p>	<p>treatments. Participants in the Reiki experienced significant improvement in quality of life. Results indicated significant decreases in pain and anxiety in the Reiki group.</p>

(continues)

Table 2 • Intervention Strategies and Results of the Reviewed Studies, Continued

Study (Year)	Intervention	Duration of Intervention	Intervention Strategies	Control Strategies	Training Providers	Scales	Assessment Times	Results
			imbalances, congestions, or deficits. The practitioner makes a single pass with 2 hands through the patient's field in quiet brushing motions, from head to sacrum and directs energy purposefully toward or away from a particular area of the patient's field to release congestion, fill in areas of perceived energy deficit, or facilitate flow of energy in a healthy pattern throughout the patient's field, from the head through the feet.					

Abbreviations: BFI, Brief Fatigue Inventory; BNI, Brief Nausea Index; BPI, Brief Pain Index; BSI-18, Brief Symptom Inventory-18; CES-D, Center for Epidemiologic Studies Depression Scale; ESAS, Edmonton Symptom Assessment Scale; EORTC QLQ-C30, European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire version 3.0; FACT-B, Functional Assessment of Cancer Therapy-Breast; FACT-BMT, Functional Assessment of Cancer Therapy–Bone Marrow Transplant; FACT-G, Functional Assessment of Cancer Therapy General; FACT-GOG-NTX, Functional Assessment of Cancer Therapies–Gynecologic Oncology Group–Neurotoxicity scale; HT, healing touch; MAAS, Mindful Attention Awareness Scale; POMS, Profile of Mood States; RT, relaxation therapy; STAI, State-Trait Anxiety Inventory; TT, therapeutic touch; VAS, visual analog scale.

Table 3 • Methodological Qualities of the Studies

Study (Year)	Methodological Quality						
	Selection Bias	Study Design	Confounders	Blinding	Data Collection Method	Withdrawals and Dropouts	Global Rating
1. Büyükbayram and Çitlik Sarıtaş (2021) ³³	Strong	Strong	Strong	Weak	Strong	Strong	Moderate
2. Chirico et al (2017) ³⁸	Weak	Strong	Weak	Weak	Strong	Strong	Weak
3. Clark et al (2012) ²⁸	Strong	Strong	Strong	Weak	Strong	Moderate	Moderate
4. Demir et al (2015) ³⁵	Weak	Strong	Strong	Moderate	Strong	Weak	Weak
5. FitzHenry et al (2014) ²⁹	Strong	Strong	Strong	Strong	Strong	Strong	Strong
6. Karaman and Tan (2021) ³⁴	Weak	Moderate	Strong	Weak	Strong	Strong	Weak
7. Lu et al (2016) ³⁰	Strong	Strong	Strong	Weak	Strong	Moderate	Moderate
8. Post-White et al (2003) ³¹	Weak	Strong	Strong	Weak	Strong	Moderate	Weak
9. Rosenbaum and Van de Velde (2016) ³²	Weak	Strong	Weak	Moderate	Weak	Strong	Weak
10. Tabatabaee et al (2016) ³⁶	Weak	Strong	Strong	Moderate	Strong	Weak	Weak
11. Tsang et al (2007) ³⁹	Weak	Strong	Weak	Moderate	Strong	Strong	Weak
12. Vanaki et al (2016) ³⁷	Weak	Strong	Strong	Moderate	Weak	Weak	Weak

Table 4 • Risk of Bias Assessment for Included Studies

Study	Selection Bias		Performance Bias	Detection Bias	Attrition Bias	Reporting Bias	Other Bias
	Random Sequence Generation	Allocation Concealment	Blinding of Participants and Personnel	Blinding of Outcome Assessment	Incomplete Outcome Data	Selective Reporting	Other Sources of Bias
1. Chirico et al (2017) ³⁸	+	?	-	?	+	+	+
2. Clark et al (2012) ²⁸	+	+	-	-	+	+	+
3. Demir et al (2015) ³⁵	?	?	+	-	+	+	?
4. FitzHenry et al (2014) ²⁹	+	+	+	+	+	+	+
5. Lu et al (2016) ³⁰	+	+	-	-	+	-	+
6. Post-White et al (2003) ³¹	+	?	-	-	+	+	+
7. Tabatabaee et al (2016) ³⁶	+	-	?	?	+	+	?
8. Vanaki et al (2016) ³⁷	+	?	?	?	+	+	+

Study	Comparability of Participants	Selection of Participants	Confounding Variables	Measurement of Exposure	Blinding of Outcome Assessment	Outcome Evaluation	Incomplete Outcome Data	Selective Outcome Reporting
9. Büyükbayram and Çitlik Sarıtaş (2021) ³³	+	-	+	+	-	+	+	+
10. Karaman and Tan (2021) ³⁴	+	?	+	+	-	+	+	+
11. Rosenbaum and Van de Velde (2016) ³²	+	-	-	+	?	+	+	+
12. Tsang et al (2007) ³⁹	+	?	-	+	?	+	+	+

Note: -: high risk of bias, +: low risk of bias, ?: unclear risk of bias.

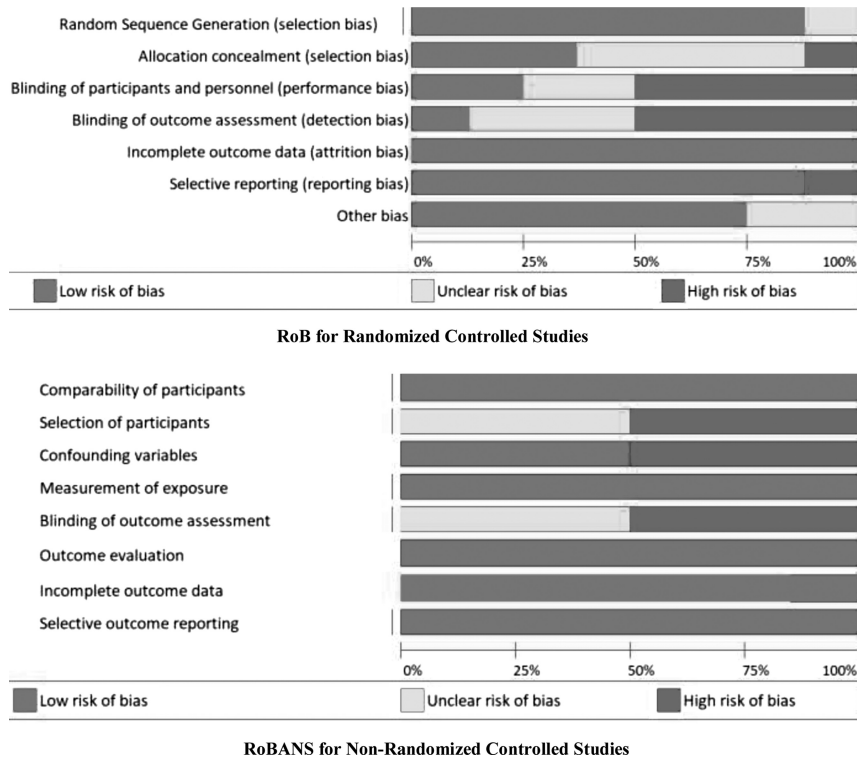


Figure 2 ■ Risk of bias. RoB for randomized controlled studies. RoBANS for nonrandomized controlled studies.

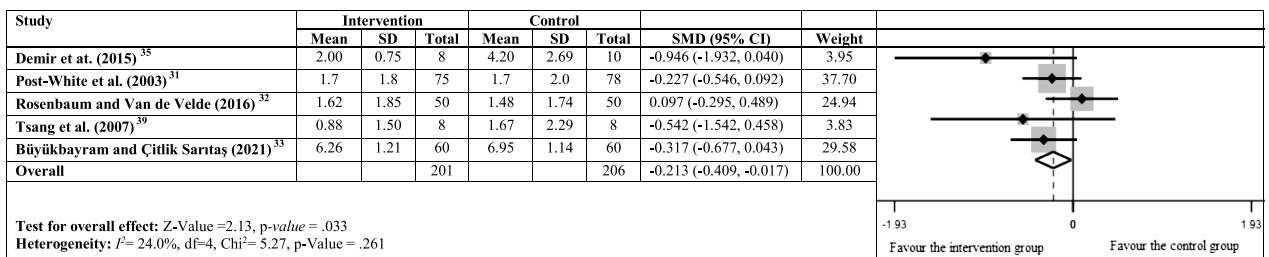
emphasized that there was a significant decrease in depression, anger, and confusion scores of the participants after the healing touch ($P < .001$) (Table 5).

■ Discussion

The meta-analysis performed in this study presented the results from 12 studies that investigated the effects of touch therapies

on the physical and psychosocial status of patients with cancer in the past 19 years (from 2003 to 2021). Pain, the most common symptom among patients with cancer, affects 59% of patients with cancer receiving anticancer treatment and 64% of patients with metastatic, advanced, or terminal cancer. The American Society of Clinical Oncology recommends a care plan for managing chronic pain that includes pharmacological and nonpharmacological techniques.^{40,41} Studies with high levels of evidence on cancer-related pain treatments, including nonpharmacological

(A)



(B)

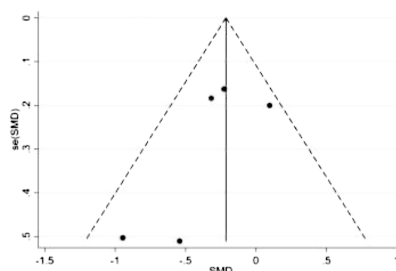
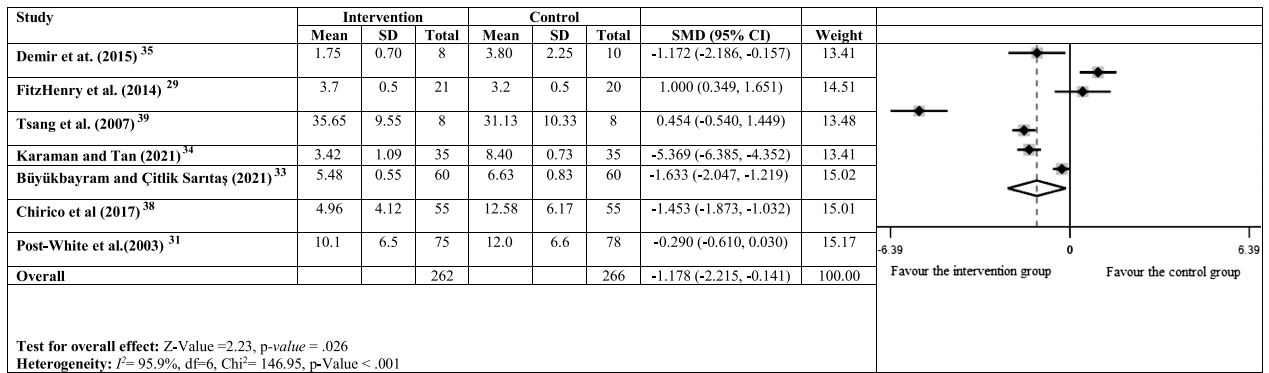


Figure 3 ■ (A) Forest plot for pain for the intervention and control groups. (B) Funnel plot for pain.

(A)



(B)

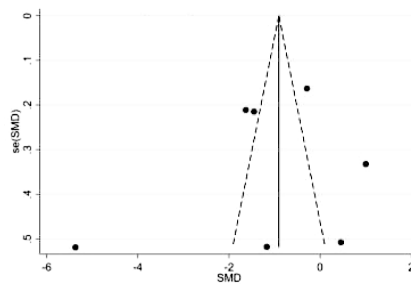


Figure 4 ■ (A) Forest plot for fatigue for the intervention and control groups. (B) Funnel plot for fatigue.

interventions, are needed. Of the 12 studies included in this meta-analysis, 5 examined the effect of touch therapies on pain. Of these 5 studies,^{31–33,35,39} 4 included Reiki and 1 included the healing touch. The number of studies involving touch therapies other than Reiki in pain control in patients with cancer was very few. Although the included studies showed a homogeneous structure, the methodological quality of the studies was generally poor. The results showed that participants who received touch therapies had more significant pain reduction than those who did not, but the amount of pain reduction was minimal. These results supported that touch therapies can reduce pain. In the literature, it has been reported that touch therapies are effective in reducing the level of pain, supporting these meta-analysis results.^{40,42}

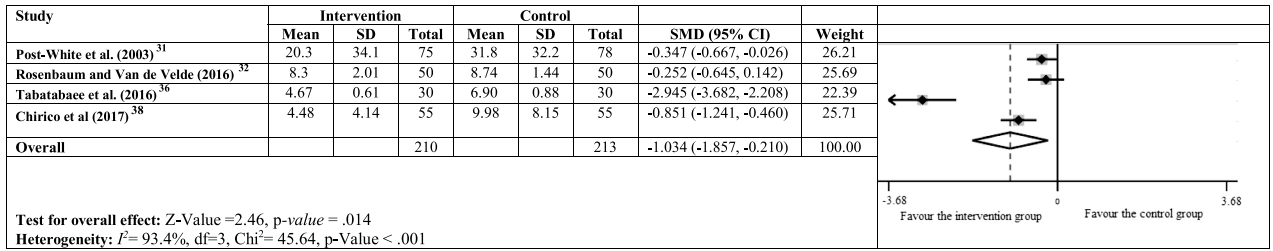
In addition, the literature highlighted that touch therapies were practical, and as there are no risks associated with them, they may be considered a practical therapeutic intervention in pain management.⁴³

Touch therapies can reduce cancer-related fatigue by increasing patients' energy levels, promoting relaxation, and enhancing psychological well-being.³⁹ Seven studies^{29,31,33–35,38,39} examining the effect of touch therapies on fatigue were evaluated in this meta-analysis. Five of these studies included Reiki, and 2 included healing touch. The variances of the included studies were heterogeneous, and the methodological quality was strong for 1 study and moderate for 2 studies. As for the outcomes of studies, touch therapies significantly reduced fatigue levels in patients

Table 5 • The Effectiveness of Touch Therapies on Other Primary and Secondary Outcomes

Study Authors	Measure Outcomes	Intervention Group		P
		First Assessment	Last Assessment	
Clark et al (2012) ²⁸	Psychological distress	20.14 (9.72)	17.14 (12.88)	.474
	Neurotoxicity	23.71 (10.16)	26.14 (10.57)	.177
Rosenbaum and Van de Velde (2016) ³²	Overall health	5.44 (2.2)	6.94 (2.14)	<.001
Tabatabaee et al (2016) ³⁶	Activity level	7.78 (0.86)	4.67 (0.66)	.001
	Walking ability	6.13 (1.33)	3.73 (0.78)	.001
	Sleep	8.07 (1.20)	4.73 (0.90)	.001
	Relation other people	7.57 (1.04)	4.50 (1.13)	.001
Chirico et al (2017) ³⁸	Depression	13.14 (10.89)	7.68 (9.87)	<.001
	Anger	14.26 (10.05)	4.48 (6.47)	<.001
	Confusion	10.68 (5.55)	5.95 (5.19)	<.001
Vanaki et al (2016) ³⁷	Nausea	–	5.36 (2.17)	<.001

(A)



(B)

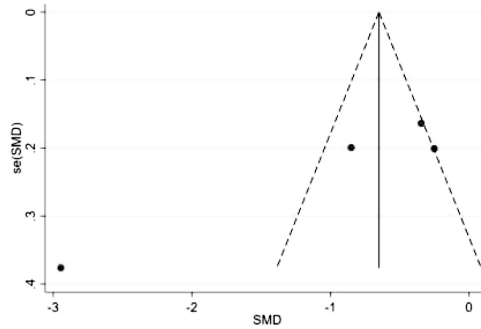


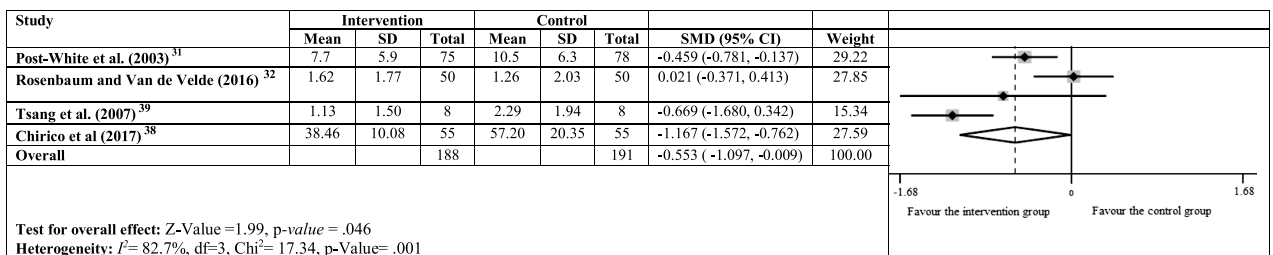
Figure 5 ■ (A) Forest plot for mood for the intervention and control groups. (B) Funnel plot for mood.

with cancer. The results of previous studies also report that touch therapies are effective in reducing the fatigue levels of patients with cancer.⁴⁴⁻⁴⁶

Physiologically, it is thought that touch therapies affect the autonomic nervous system and improve the biofield by increasing parasympathetic tone and decreasing sympathetic activation, and thereby controlling mood, stress, and anxiety.^{47,48} Of the studies included in this meta-analysis, 4 examined the effect of touch therapies on anxiety,^{31,32,38,39} 4 on mood,^{31,32,36,38} and 2 on stress.^{32,35} Three anxiety studies included Reiki, and 1 included

healing touches. Two mood studies were Reiki, 1 was touch therapy, and 1 was healing touch. Finally, stress studies included only Reiki. The variances of the included studies were heterogeneous, and their methodological quality was weak. The results showed that touch therapies effectively reduced anxiety levels and improved mood in cancer patients but had no effect on stress. In their literature review, Jackson et al¹⁷ reported that touch therapies may be viable for reducing cancer patients' psychological symptoms. Özcan Yüce and Taşçı⁴⁹ conducted a single-blind RCT to determine the effect of Reiki on the stress levels of individuals caring

(A)



(B)

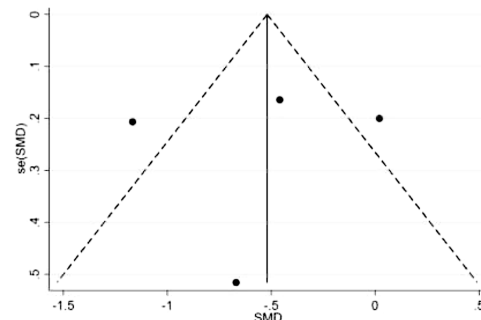
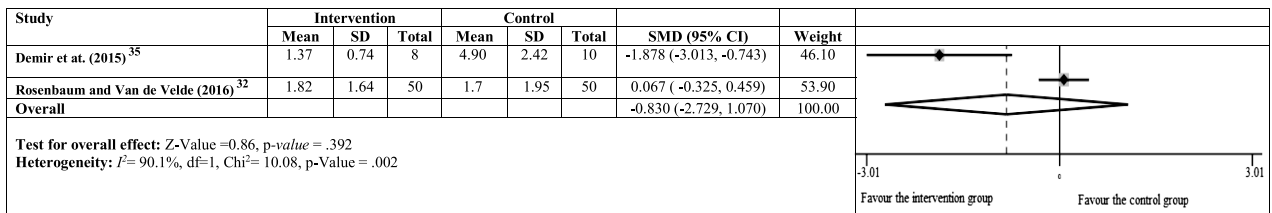


Figure 6 ■ (A) Forest plot for anxiety for the intervention and control groups. (B) Funnel plot for anxiety.

(A)



(B)

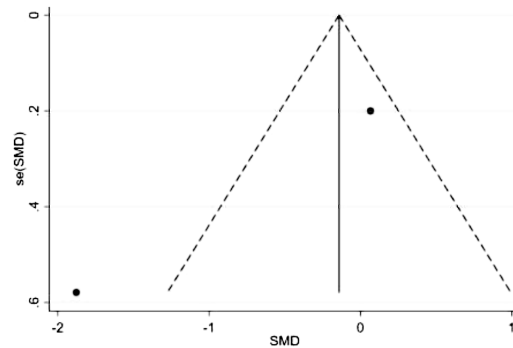


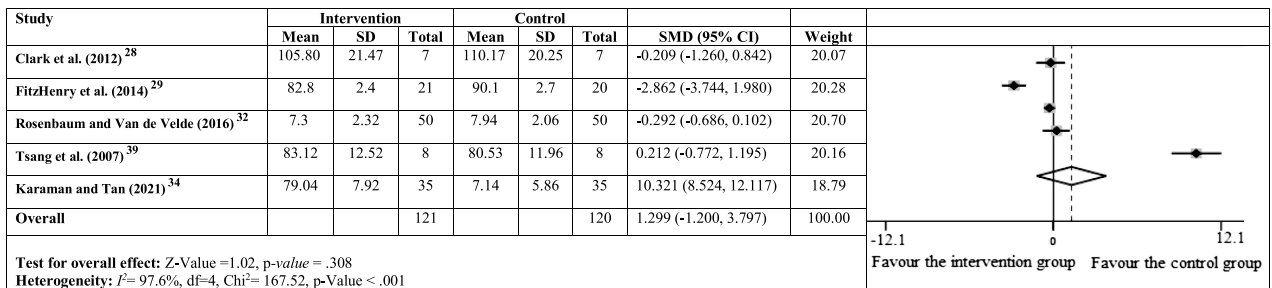
Figure 7 ■ (A) Forest plot for stress for the intervention and control groups. (B) Funnel plot for stress.

for patients with cancer, and it was determined that Reiki reduced the stress levels of caregivers, regulated blood pressure and pulse rate, and provided relief in caregivers.

Of the 12 studies included in the meta-analysis, 5 studies^{28,29,32,34,39} examined the impact of touch therapies on cancer patients' quality of life. Four of these studies were Reiki, and 1 was healing touch. One study was strong, 2 studies were moderate, and 2 were of poor methodological quality, and the variances of the studies were heterogeneous. Nevertheless, the results showed that touch therapies did not affect cancer patients' quality of life. Hersch et al,⁵⁰

in a systematic review to determine the effect of psychosocial interventions on quality of life outcomes in women with gynecological cancer, determined that healing touch could positively affect health-related quality of life, but the evidence is limited. Moore et al⁵¹ reviewed 26 articles in a systematic review to identify evidence for supportive care interventions for men with prostate cancer and reported that supportive care interventions did not affect the quality of life. Quality of life is a multidimensional concept with physical, psychological, social, and spiritual dimensions. Therefore, long-term interventions covering these areas are required to increase the quality

(A)



(B)

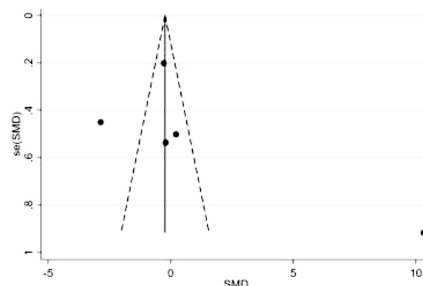


Figure 8 ■ (A) Forest plot for quality of life for the intervention and control groups. (B) Funnel plot for quality of life.

of life. The results of the current meta-analysis regarding the effect of touch therapies on quality of life may be due to the different intervention times and evaluation times of the included studies.

The findings of the present meta-analysis explored that only one of the studies²⁹ had strong quality. The poor quality of the studies was because of unlimited confounders, no randomization, no blinding, and high withdrawal and dropout rates. It is essential to limit confounders and follow blinding procedures to maximize the validity of a study's findings and minimize the risk of bias.⁵² Therefore, studies with higher methodological quality are needed to better evaluate the effects of touch therapy interventions applied to patients with cancer.

Strengths and Limitations

Only 1 of the reviewed studies was of strong quality, with other studies of poor quality. This may have affected the study results, but it also highlighted the need for high-quality studies in the literature. Second, studies in languages other than English were not included. Third, studies included in this meta-analysis were heterogeneous regarding intervention duration, practitioners, and content. This may have affected our meta-analysis results. However, the present meta-analysis has some strengths. The literature search was carried out in a widespread and inclusive manner, to the extent possible, using several electronic databases. In addition, the included studies' methodological qualities and risk of bias were presented in detail.

Implications for Practice

Nurses are responsible for providing and managing the care of patients with cancer in many settings. This study shows that touch therapies can be integrated into the care of patients with cancer as part of compassionate care. Integrative approaches such as touch therapies should be involved in the nursing education curriculum. Health systems should provide the necessary support for nurses interested in touch therapy and who want to work in this context. It is recommended to conduct training for nurses on touch therapy intervention as independent nursing interventions and make it part of routine nursing care. Nurses should evaluate patients' beliefs and knowledge about touch therapy and provide the necessary information. In addition, conducting nursing studies with high methodological quality on touch therapies will facilitate the acceptability and dissemination of this approach.

Conclusion

This systematic review and meta-analysis report the literature on touch therapies' effectiveness in patients with cancer. The pooled results in the meta-analysis reported that touch therapy intervention effectively reduced pain, fatigue, anxiety, and negative mood in cancer patients. In general, the findings from this meta-analysis approve the potential physical and psychological efficacy of touch therapy interventions administered by trained interventionists in patients with cancer. Furthermore, this systematic review and

meta-analysis indicated that touch therapies could be administered to patients before, during, and after cancer treatment by nurses trained and/or certified in touch therapies in clinical practice.

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