Systematic review and meta-analysis

Efficacy of Biofield Therapies in alleviating pain and reducing symptoms associated with mental disorders: a systematic review and meta-analysis

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Abstract

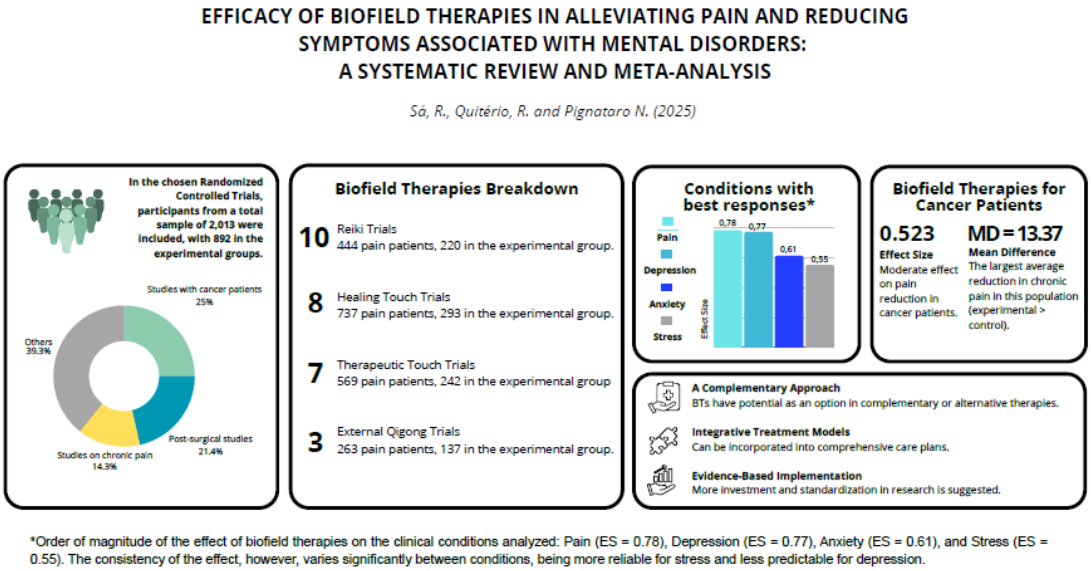
Background and purpose: To evaluate the effectiveness of Biofield Therapies (BTs) in alleviating pain and mitigating symptoms associated with mental disorders (SAMD), with particular emphasis on comparing outcomes between touch-based and non-touch interventions.

Methods: A systematic review and meta-analysis were conducted following the PRISMA 2020 guidelines. Searches were performed in PubMed, Scopus, and CINAHL, supplemented by a manual search in Google Scholar. A total of 28 randomized controlled trials (RCTs) published between 2003 and 2023 were included, assessing the effects of BTs such as Reiki, Therapeutic Touch, Healing Touch, and External Qigong. Two independent reviewers conducted screening and data extraction. Effect sizes (ES) were calculated using random-effects models, and a structured narrative synthesis was incorporated to address heterogeneity.

Results: BTs demonstrated a moderate pooled effect on pain (ES = 0.784; 95% CI: 0.094 to 1.475; $p = 0.030$) and a mild to moderate effect on SAMD (ES = 0.326; 95% CI: 0.162 to 0.491; $p < 0.001$), although both analyses revealed substantial heterogeneity. A key finding was that touch-based interventions yielded a larger mean effect size (ES = 0.830) and significantly more consistent outcomes for pain (Coefficient of Variation, CV = 0.936) compared to non-touch therapies (ES = 0.680; CV = 1.327). Within the SAMD group, effects varied by symptom; anxiety and stress showed more favorable trends, while results for depression were inconsistent. No statistically significant predictors of effect size were identified in ANCOVA models for either group. Quality assessment indicated that most included studies were of moderate methodological rigor.

Conclusion: Preliminary evidence suggests that BTs, particularly touch-based modalities, may offer beneficial and more consistent effects for chronic pain. BTs may also help manage certain psychological symptoms, especially anxiety and stress. However, due to significant heterogeneity in study designs and populations, these findings should be interpreted with caution. BTs may be explored as complementary approaches in integrative care, but further high-quality, standardized trials are needed to establish efficacy and guide clinical recommendations.

Keywords: Biofield Therapies, Chronic Pain, Anxiety, Depression, Complementary Medicine, Systematic Review, Meta-analysis



*Order of magnitude of the effect of biofield therapies on the clinical conditions analyzed: Pain (ES = 0.78), Depression (ES = 0.77), Anxiety (ES = 0.61), and Stress (ES = 0.55). The consistency of the effect, however, varies significantly between conditions, being more reliable for stress and less predictable for depression.

1. Introduction

In recent years, the rates of musculoskeletal disorders that generate pain symptoms, such as osteoarthritis of the hip and knee, rheumatoid arthritis, and back and neck pain, have increased globally [1]. Pain symptoms are also observed in cancer patients - despite a reduction in prevalence in recent decades, pain is still common in 44.5% of patients at some stage of treatment [2–4]. While there is growing concern about deaths attributed to cancer [5], another equally important problem is the increase in the global prevalence of mental disorders, such as anxiety, stress and depression. Data from the Global Burden of Disease Study show that, between 1990 and 2021, cases of anxiety increased globally by 86%, while those of depression rose from 176 million to 332 million, representing an increase of 88% over the same period. In addition, musculoskeletal disorders, often associated with chronic pain, showed a significant increase of 95% [6]. It is estimated that 71% of the global burden of anxiety disorders could be avoided, for example, if there was adequate access to effective treatments [6].

Although conventional medicine offers effective treatments, many patients seek complementary therapies to alleviate symptoms, especially when allopathic and invasive interventions do not produce the expected results [7]. A cautious and relevant consensus on the effects of Complementary Alternative Medicine (CAM) appears in the positions of the National Center for Complementary and Integrative Health (NCCIH) in which it considers these approaches promising, but reinforces the need for rigorous research to validate mechanisms and efficacy [8]. In agreement, the World Health Organization (WHO) recognizes that Traditional Complementary and Integrative Medicine should be incorporated with scientific evidence and global standardization [9].

Within the context of integrative and complementary approaches, energy-based medicine emerges as a field deserving recognition from health agencies and organizations. The National

Cancer Institute (NCI) and its Division of Cancer Diagnostic and Treatment (DCTD) recognize the term energy therapies (or energy healing) [10]. Research from institutions such as the MD Anderson Cancer Center categorizes some of these approaches as Biofield Therapies (BTs) [11], which involve the manipulation of subtle energy fields, such as in Reiki, Therapeutic Touch, External Qigong, and Healing Touch. Particularly regarding this last category, clinical populations with chronic and acute conditions seem to seek BTs outside the conventional medical system, as well as within the growing availability of these therapies in hospital systems and medical clinics [12].

Thus, the efforts of this work focused on the review and analysis of the most relevant scientific evidence on BTs, with an emphasis on the attenuation of pain and symptoms associated with mental disorders. In addition, we sought to evaluate and compare the effectiveness of interventions with and non-touch in different types of pain (chronic and acute), providing a robust basis to guide future clinical practices and research in the field of Traditional Integrative and Complementary Medicine.

2. Methods

2.1. Protocol and registration

The protocol for this review was registered with *PROSPERO* (CRD42024618260). Results are reported according to the Preferred Reporting Items for Systematic Review and Meta-Analysis (*PRISMA*) 2020 checklist [13].

2.2. Eligibility criteria and information sources

Randomized controlled trials (RCTs) published in English that evaluated the impact of BTs on symptoms such as pain, anxiety, depression, aggressiveness, and stress were included. To ensure methodological rigor and minimize the risk of bias, observational studies, systematic, scoping, and narrative reviews, as well as case series and studies without a control group were excluded. In addition, meta-analyses were excluded to avoid duplication of data and overestimation of effects. The search was limited to studies published between 2003 and 2023, ensuring the relevance and timeliness of the results.

2.3. Search strategy and Selection process

A comprehensive literature search was conducted across *PubMed*, *Scopus*, and *CINAHL*, employing a structured strategy. Keywords included “Biofield”, “Reiki”, “Therapeutic Touch”, “Healing Touch”, and “External Qigong”, combined with Boolean operators such as “Biofield AND anxiety”, “Biofield AND depression”, “Biofield AND stress”, “Biofield AND pain”, and “Biofield AND cancer”. Although no medical librarian was formally consulted, the search strategy was developed by the research team using established systematic review protocols.

To enhance the breadth and inclusiveness of the search, a manual screening of gray literature was also performed using *Google Scholar*, particularly to identify potentially relevant studies indexed in additional databases or unpublished sources. After removing duplicates and screening titles and abstracts, 351 records were initially identified. Following full-text assessment of 34 articles, a total of 28 randomized controlled trials (RCTs) met the inclusion criteria and were selected for analysis. These studies covered the most common forms of BTs, namely Reiki, Healing Touch, Therapeutic Touch, and External Qigong.

2.4. Data collection process and Data items

The 28 RCTs included in this review were categorized into two analytic groups: Pain and Symptoms Associated with Mental Disorders (SAMD). Fourteen trials were allocated to the Pain group and twenty-two to the SAMD group. Notably, six studies contributed data to both groups, as they assessed BTs in relation to both physical and psychological outcomes. In the SAMD category, two trials were counted twice due to reporting separate outcomes for anxiety and depression.

Two independent reviewers screened titles and abstracts for inclusion, and full texts were evaluated for eligibility. Disagreements were resolved by consensus or consultation with a third reviewer. Data extraction was conducted using a standardized spreadsheet, capturing study characteristics, population details, intervention protocols, outcome measures, and summary statistics (e.g., means, standard deviations, effect sizes). The extracted data was verified by a third reviewer to ensure accuracy.

Statistical analyses were performed using *JASP software* (version 0.19.3.0). We applied Forest Plots, Funnel Plots, Raincloud Plots, Bar Plot and descriptive analysis to evaluate the overall efficacy of BTs in the Pain and SAMD groups. Heterogeneity between studies was assessed using statistical I^2 e Tau^2. Analysis of Covariance (ANCOVA) was used to explore the influence of protocol-related variables such as intervention type (with or without touch), duration per session (minutes), number of weeks, number of sessions, and weekly frequency. In cases where standard deviations (SD) were not provided, we used a standardized approach to estimate these values, based on the correlation of the width of the confidence interval (CI) to the standard error (SE), and then used the sample size (*n*) to find the SD.

$$SE = \frac{\left(CI_{upper} - CI_{lower}\right)}{2 \, . \, z}$$

Where z is the critical value for the confidence level. For a CI of 95%, $z \approx 1.96$.

2.5. *Study risk of bias assessment*

Two review authors (RS and PN) independently assessed the risk of bias for each included trial using the Cochrane Risk of Bias tool (RoB2). We resolved disagreements by consensus or by consulting a third review author (RQ).

3. Results

3.1. Study Selection

The systematic literature search, initially identified 351 records. Following the removal of duplicates, 312 unique records were screened by title and abstract. This process led to the retrieval of 34 full-text articles for detailed eligibility assessment. After a thorough evaluation, 28 studies met the predefined inclusion criteria and were selected for the final systematic review and meta-analysis. The study selection process is detailed in the PRISMA flow diagram (**Fig. 1**). The included studies investigated four primary BTs: Reiki (n=10), Healing Touch (HT, n=8), Therapeutic Touch (TT, n=7), and External Qigong Treatment (EQT, n=3). A total of 278 records were excluded due to not meeting the population, intervention, comparison, outcome, or study design (PICOS) criteria.

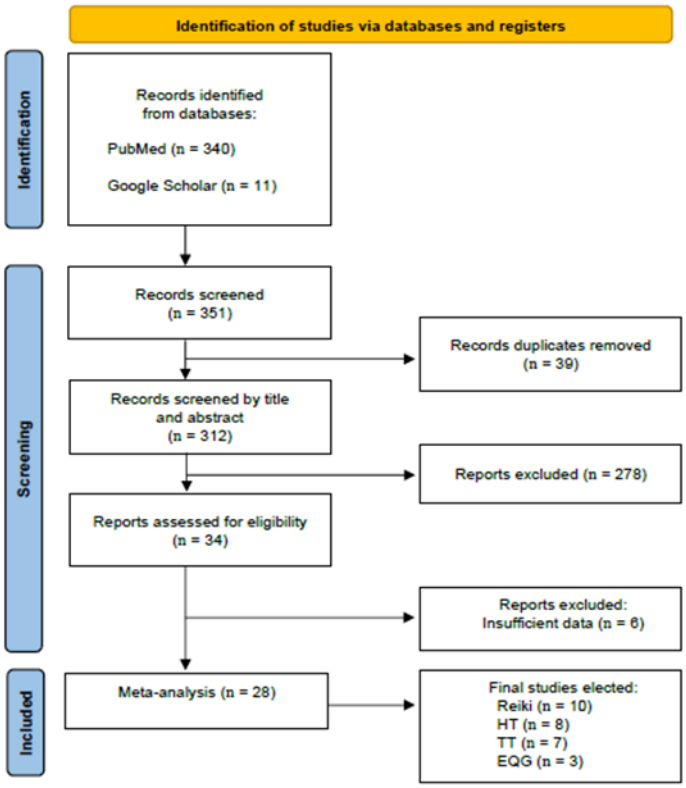


Fig. 1. PRISMA flowchart detailing the process of identification, screening, eligibility and inclusion of studies in the systematic review. HT, Healing Touch; TT, Therapeutic Touch; EQT, External Qigong.

3.2. Study Characteristics

Detailed information on the characteristics of the studies was allocated in **Table 1**, based on the data extraction. The elected RCTs involved patients from a total sample ($N = 2{,}013$) and in experimental groups (n_{Exp} = 892). Of these, 7 reports involved cancer patients [N = 447 (23%); n_{Exp} = 181 (20%)], 6 with post-surgical/operative patients [N = 611 (22%); n_{Exp} = 261 (29%)], 4 included patients with chronic pain, fibromyalgia or osteoarthritis [N = 281 (15%); n_{Exp} = 148 (17%)], 3 with healthy adults [N = 281 (15%); n_{Exp} = 125 (14%)], 1 with patients in drug addiction rehabilitation [N = 101 (14%); n_{Exp} = 51 (6%)], 1 with patients with chronic obstructive pulmonary disease [N = 100 (9%); n_{Exp} = 50 (6%)], 2 with patients with chronic neurodegenerative conditions [N = 73 (50%); n_{Exp} = 29 (3%)], 1 with transplanted (hematopoietic stem cells) [N = 46 (6%); n_{Exp} = 13 (1,3%)], 1 with people living with HIV [N = 29 (5%); n_{Exp} = 11 (1,2%)], 1 study with sickle cell patients [N = 24 (1,5%); n_{Exp} = 11 (1,2%)] and 1 with elderly people [N = 20 (1,1%); n_{Exp} = 12 (1,2%)]. This diversity of populations allowed a comprehensive analysis of the efficacy of BTs in different clinical contexts.

Furthermore, of the 22 trials ($N = 1.581$) that investigated populations with psychological conditions (SAMD group), 9 treated some type of anxiety disorder ($n_{Exp} = 349$), 7 intervened in cases of depression ($n_{Exp} = 176$), 5 in stress ($n_{Exp} = 144$) and 1 included in its scope an intervention on aggressiveness ($n_{Exp} = 17$). Of the studies allocated to the Pain and SAMD groups, 10 applied Reiki [N = 444 (22%); n_{Exp} = 220 (25%)], 8 Healing Touch [N = 737 (36%); n_{Exp} = 293 (33%)], 7 Therapeutic Touch [N = 569 (29%); n_{Exp} = 242 (27%)] and 3 External Qigong [N = 263 (13%); n_{Exp} = 137 (15%)]. Twenty-four trials (86%) compared the effects of BTs on pain symptoms and symptoms associated with mental disorders, using touch-based or touch-free interventions, with no additional technique, while four reports involved multimodal interventions.

3.3. Risk of bias in studies

The risk of bias assessment for the 28 included clinical trials, summarized in **Fig. 2**, revealed that the majority (64.3%; n=18) were rated as having some concerns, while 25.0% (n=7) were classified as high risk and 10.7% (n=3) demonstrated low risk of overall bias. The detailed analysis by domain, illustrated in **Fig. 3**, identified the specific sources of these biases. Domain 2 (Deviations from the intended interventions) was the most critical, with 79% of studies exhibiting a high risk, primarily due to the inability to blind therapists and participants and the inconsistent use of intention-to-treat analysis. Domain 4 (Measurement of the outcome) was also a significant source of bias, with 61% of studies at high risk, reflecting the challenge of blinding the assessment of subjective outcomes such as pain and fatigue. It is important to note that, of the 7 studies with

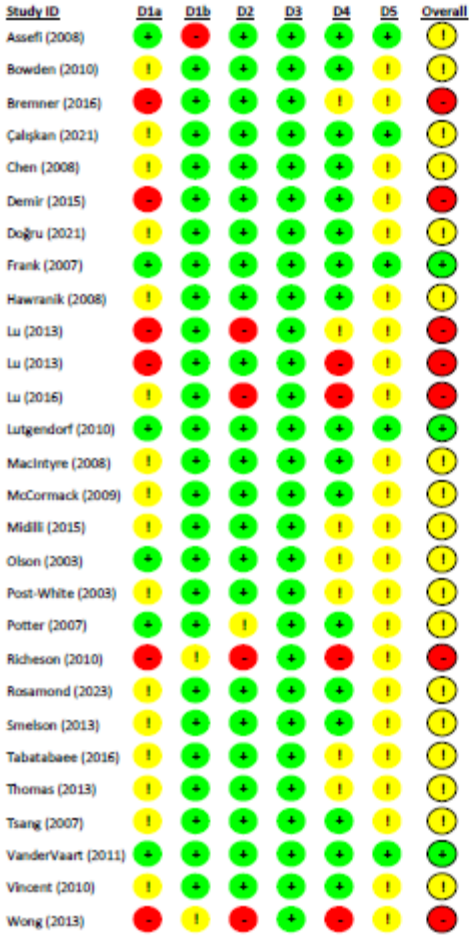


Fig. 2. Overall risk of bias assessment for the 28 included clinical trials.

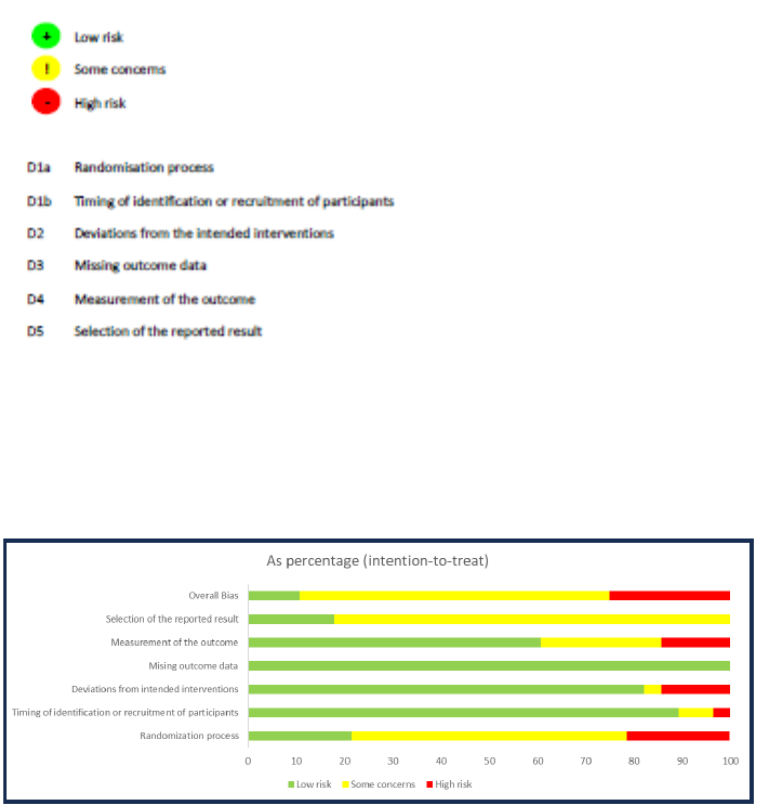


Fig. 3. Detailed risk of bias assessment by methodological domain. Domain 2 (Deviations from intended interventions) was the primary source of bias, with 79% of studies rated as *high risk*, mainly due to inability to blind therapists/participants and inconsistent use of intention-to-treat analysis.

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an overall high risk, 6 had Domain 1 (Randomization process) rated as high risk, indicating that problems in the randomization process were a determining factor in the final classification of these trials. In contrast, Domains 3 (Missing outcome data) and 5 (Selection of the reported result) were predominantly rated as low risk for most studies, indicating generally adequate methodological conduct in these areas.

3.4. Publication bias

Funnel plots were conducted for the two efficacy groups, Pain and SAMD, to analyze publication bias. In the SAMD group (**Fig. 4a**), The presence of a slight asymmetry in the funnel suggests the possibility that studies with negative or null results were underrepresented in the analysis. Although the overall effect estimate (ES = 0.16) is significant, this value should be interpreted with caution due to the potential influence of publication bias and high heterogeneity. Visual inspection in the Pain group (**Fig. 4b**) indicates a slightly asymmetric distribution, with a greater concentration of studies on one side of the graph. Therefore, the data indicates that not there is statistically significant evidence of publication bias in the studies analyzed (p = 0.848).

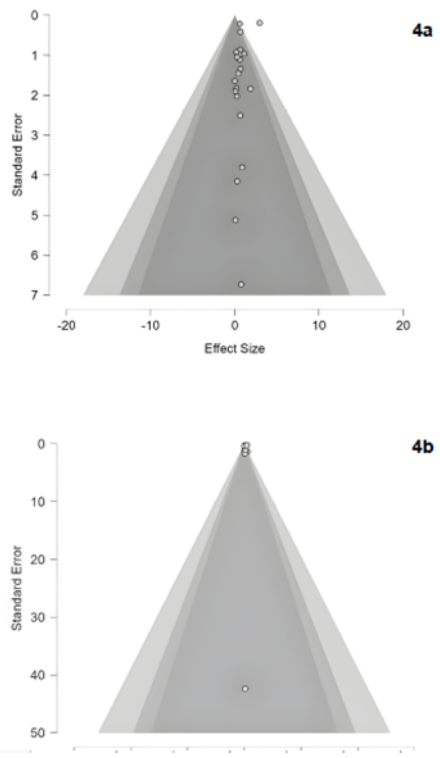

Fig. 4. Funnel plot illustrating the relationship between standard error (Y-axis) and effect size (X-axis) for the included trials. Figures 4a and 4b represent the expected confidence interval for the distribution of effect sizes, for the SAMD and Pain groups, respectively, with greater precision (smaller standard error) at the top.

3.5. Analysis of Pain and SAMD groups

The analyses performed for the Pain group revealed an overall positive and statistically significant effect estimate. The Forest Plot (**Fig. 5a**) indicated a pooled effect size (ES) of 0.784 (95% CI: [0.094, 1.475], p = 0.030), with significant heterogeneity between studies (Q = 45.956, $p < 0.001$, $I^2 = 62.57\%$). This result suggests that, despite the methodological and clinical variation between trials, BTs had a moderate effect on pain attenuation. The prediction interval (95% PI: [-1.004, 2.573]) demonstrates wide variability in the expected effects in new studies, reinforcing the need for caution in generalizing the findings. In the SAMD group (**Fig. 5b**), the combined effect size was 0.326 (95% CI: [0.162, 0.491], $p < 0.001$), indicating a mild to moderate effect of BTs in reducing symptoms associated with mental disorders, such as anxiety, stress and depression. Heterogeneity was significant (Q = 124.20, $p < 0.001$), with $\tau^2 = 0.054$ and prediction interval ranging from -0.204 to 0.857, suggesting that, in new clinical contexts, the effects may range from null to moderately positive. Trials focused on anxiety showed more consistent effects, while those targeting depression and stress showed greater dispersion in the confidence intervals, contributing to the overall variability of the analysis.

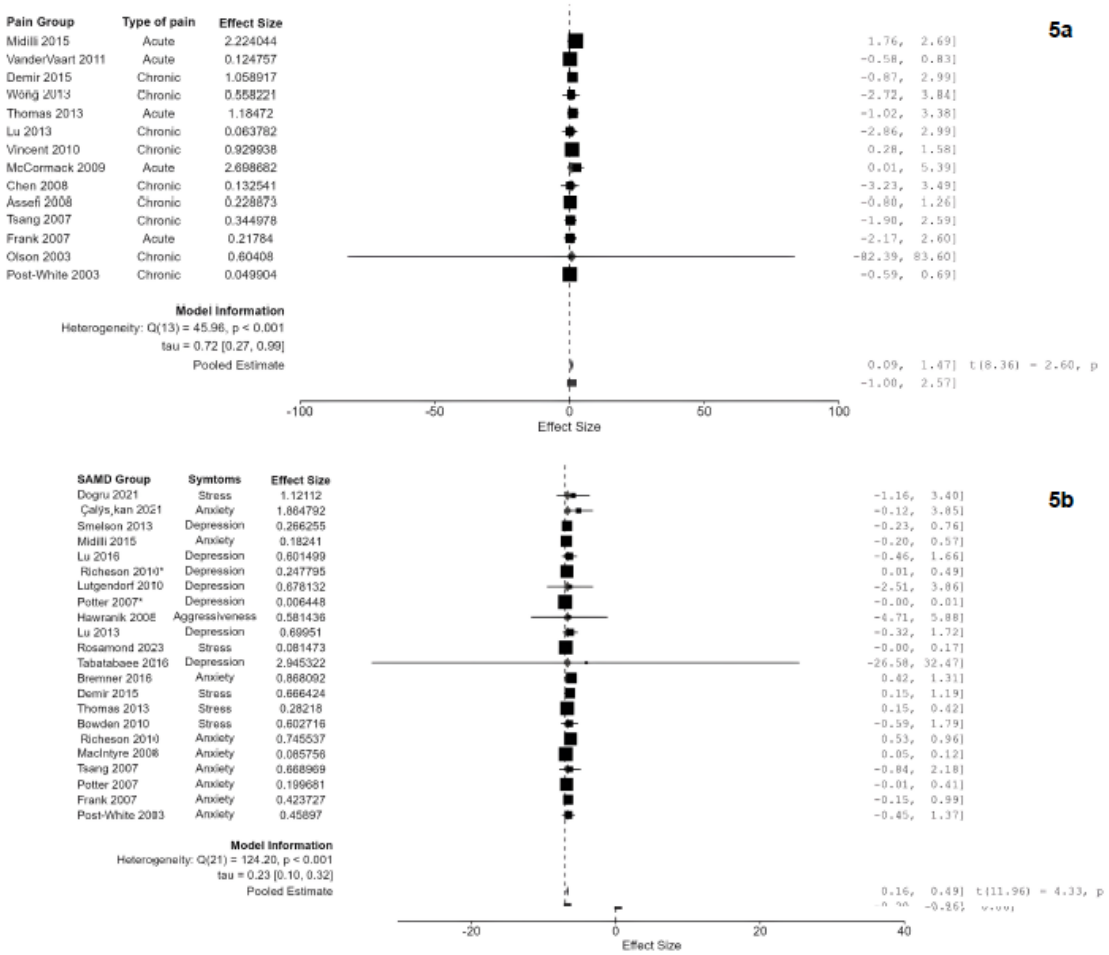

Fig. 5. Forest plot of the Pain group (5a) represents the individual effect sizes for each study included in the meta-analysis, based on pain types (acute and chronic). Forest plot 5b represents the individual effect sizes for each study included in the SAMD group, based on symptoms (anxiety, depression, stress, and aggressiveness).

In the analysis of the symptoms of the SAMD group (Supplementary Material S1), effect sizes varied according to the clinical outcome assessed. Aggressiveness had a mean ES of 0.581, being the most stable, without variation, and with similar values between the control and experimental groups. Anxiety had a mean ES of 0.611, with wide variability (SD = 0.542), indicating heterogeneity between studies, but with a tendency for improvement in the experimental group, according to the displacement of the MD (difference of means) from -18.221 in the control group to -12.853 in the experimental group. For depression, the mean ES was the highest (0.778), but with a large dispersion (SD = 0.990), suggesting inconsistent effects across studies. However, the improvement in the experimental group was modest compared to the control, with a shift from -3.757 to -2.333 in the MD. Finally, stress presented a mean ES of 0.551, with moderate variation (SD = 0.398), and a change in the MD from 1.214 in the control to 3.790 in the experimental group, indicating a possible trend toward a positive effect of the interventions. These findings suggest that, while anxiety and depression demonstrate variable effects,

interventions for stress appear to produce a more consistent and favorable response in the experimental group.

The ANCOVA results confirmed the absence of significant effects of the factors analyzed (Intervention, Frequency, Duration per Session, Number of Sessions and Number of Weeks) on the effect size in the Pain group. None of the factors presented statistical significance ($p > 0.05$), and the residual variance (Sum of Squares = 6.688, df = 8) was substantially higher than the variance explained by the factors included. For the SAMD group, the ANCOVA results revealed no significant effects for the factors analyzed ($p > 0.05$). The residual sum of squares (7.022, df = 16) indicated that much of the variance in effect size was not explained by the factors included in the model (data available in Supplementary Material S2).

The Raincloud Plot (**Fig. 6a**) shows that non-touch interventions showed greater variability, with ES ranging widely between 0 and 3. The density of studies revealed a concentration around ES = 1, although extreme values were also observed. In contrast, touch interventions showed less variability, with ES concentrated between 0 and 0.5 and a symmetric and compact density curve, suggesting greater consistency in the results. In the SAMD group, the Raincloud Plot (**Fig. 6b**) highlighted those trials related to anxiety and depression contributed significantly to this variability. The touch intervention, on the other hand, presented lower and more consistent ES, with values concentrated between 0 and 0.5. The density for symptoms such as stress and aggressiveness was low, with less variation in the results.

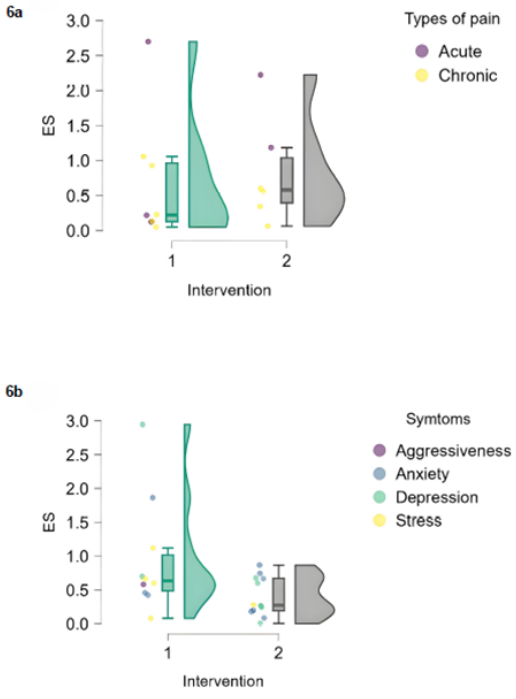

Fig. 6. Raincloud plots highlight differences in effect size (ES) between non-touch (1) and with-touch (2) interventions for different types of pain, as shown in the upper graph 6a, and symptoms (aggressiveness, anxiety, depression, and stress), as shown in the lower graph 6b. Graph 5a demonstrates that the effect size (ES) varies between with-touch (2) and non-touch (1) interventions, being larger for non-touch interventions.

The results of the descriptive analysis of the Pain group indicate that touch interventions had a larger mean effect size (ES = 0.830) compared to non-touch interventions (ES = 0.680). This difference suggests that physical contact may play a relevant role in the effectiveness of BTs for pain reduction. Furthermore, the lower variability observed in the touch group (SD = 0.777 *vs.* SD = 0.903 in non-touch intervention) indicates that studies in this subgroup provide more consistent estimates, reducing uncertainty regarding treatment effects. The coefficient of variation (CV) also reinforces this greater stability, with lower values in the touch intervention (CV = 0.936) compared to the non-touch intervention (CV = 1.327), suggesting greater uniformity in the results of touch therapies.

The Pain Group's Bar Plot (**Fig. 7**) corroborates this trend, highlighting the greater height of the bar corresponding to intervention 2 (With-touch), reflecting a higher effect size and lower dispersion of the data. In contrast, the non-touch intervention presents greater variation in the ES, indicating that the effects of non-touch therapies are more inconsistent among the studies analyzed. The similar standard error between the interventions (SE = 0.319 *vs.* SE = 0.317) suggests that, although the precision of the estimates is comparable, the observed variability in non-touch interventions highlights the need for further research to better understand the factors influencing reproducibility in these modalities.

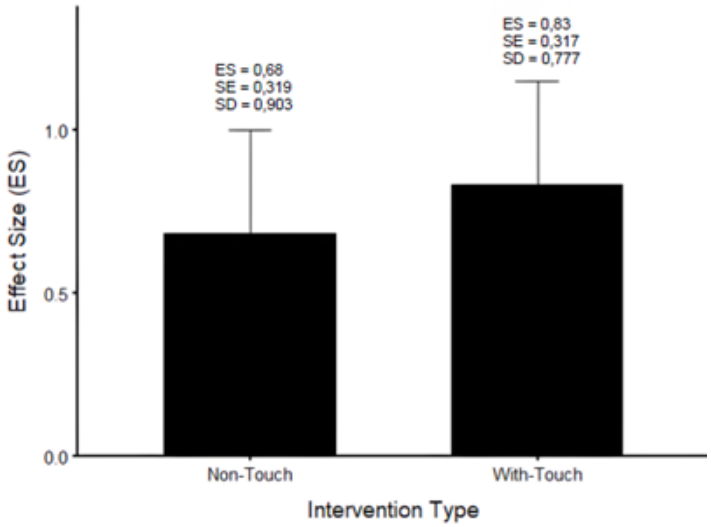

Fig. 7. Bar graph illustrating the effect size (ES) of interventions.

4. Discussion

Although trials analyzed separately may show significant effects in most cases, data were suppressed when effect size analyses were combined. This partly corroborates authors of another review that analyzed moderate-quality evidence on the effectiveness of Reiki on symptoms of anxiety and depression and that highlighted the potential shortcomings in demonstrating significant effects of BTs when aggregating results across studies [14]. In our study, this was observed, for example, in the factors of pain, anxiety, depression and stress treatment protocols, analyzed in ANCOVA. When BT protocols were combined, it is possible that hidden factors, such as individual characteristics of participants and therapists, therapy settings and study methodologies, could have influenced the results, or simply that the ANCOVA model used did not seem to be sufficient to capture the main determinants of effect size of factors related to treatment protocols. Regarding the heterogeneity of effects, the dispersion presented between interventions can be partially explained by differences in individuals' susceptibility to non-tactile interventions, corroborating the findings of another review where the authors pointed out heterogeneous results in trials with this type of intervention [15].

4.1. Efficacy in cancer patients

A total of 5 trials has explored this subgroup [16-20] Demir *et al.* (2015) reported significant reductions after distant Reiki sessions [19]. Wong *et al.* (2013) showed that pediatric oncology patients aged 3–18 years enjoyed statistically significant pain reduction but with a moderate effect size with Healing Touch [18]. In contrast, a near-null effect was observed in Post-White *et al.* (2003) applying the same BT [17]. In Olson *et al.* (2003), who analyzed the effects of a Reiki plus opioid protocol, extremely high variability was demonstrated but with a moderate effect size (ES = 0.60, CI = -82.39 to 83.60) [16]. Tsang *et al.* (2007), with an experimental group in stages I to IV who had recently completed chemotherapy treatment, daily Reiki sessions indicated insignificant reductions in chronic pain (ES = 0.34; CI: -1.90 to 2.59) [20]. In a combined analysis, the data suggest that BTs in the treatment of cancer pain have a moderate effect (ES = 0.523), with variability in the results of the trials. The greater reduction in pain in the experimental groups (MD = 30.430) compared to the control groups (MD = 17.060) indicates a potential efficacy of the BTs analyzed in this population.

4.2. Efficacy in patients with musculoskeletal disorders

In this subgroup, we combined rheumatology, post-surgical and sickle cell patients, in a total of 09 trials [21-29]. The pooled analysis indicates a moderate mean effect size (ES = 0.867) and suggests that BTs may be beneficial for musculoskeletal and related pain, but the high standard deviations indicate that the effects are not consistent across trials. In single analyses, the effect

sizes vary considerably across trials, with some showing a strong positive impact and others showing no or uncertain effects.

4.3. Efficacy of BTs in reducing symptoms associated with mental disorders

First of all, in a consensus among the authors of this work, the choice of the term *symptoms associated with mental disorders* instead of just *mental disorders* was based on three main axes: conceptual and diagnostic accuracy, clinical scope and methodological rigor. Regarding conceptual and diagnostic accuracy, the term *symptoms associated with mental disorders* avoids the inference that the participants of the studies included in the review have a formal diagnosis, especially in trials that evaluate symptoms such as anxiety, depression and stress in non-psychiatric populations (e.g.: cancer patients or people in contexts of chronic pain).

In the analysis of the 22 clinical trials evaluating the efficacy of BTs in the SAMD group, 09 trials analyzed symptoms of anxiety [17,20,22-24,30-33], 07 of depression [24,32,34-38], 05 of stress [19,39-42] and 01 of aggressiveness [43]. Most of the trials that measured anxiety levels showed moderate to high effect sizes (ES = 0,611), suggesting that anxiety may be one of the symptoms most responsive to CTs and, therefore, these findings point to the potential of BTs as complementary non-pharmacological tools for managing anxiety-related symptoms, particularly when conventional treatments are insufficient or poorly tolerated. However, this should be interpreted cautiously given the heterogeneity and variability of study designs. Regarding depression, the largest effect size (ES = 0,778) was found showing greater responsiveness. A combined analysis of these trials shows that, in the stress subgroup, the effect sizes (ES = 0,551) of the trials ranged from 0.081 (minimum) to 1.121 (maximum), showing that some interventions had a more significant impact on stress regulation than others, placing this symptom in third place in terms of effectiveness. Finally, in the case of aggressiveness, the only trial available for analysis, Hawranik *et al.* (2008), reported an ES of 0.581, indicating a moderate effect of Therapeutic Touch in patients with neurodegenerative disorders [43]. Notably, the experimental group showed a slight improvement with MD = 0.650, while the control group had MD = 0.280, reinforcing the possibility that biofield interventions may modulate symptoms of aggressiveness, especially in geriatric populations or those with neurological disorders.

4.4. Limitations of the review processes used

Despite a comprehensive search strategy, it is possible that relevant unpublished studies or studies published in grey literature were missed, a common limitation in systematic reviews that could influence the comprehensive nature of the evidence synthesis. In addition, the small number of studies for some specific symptoms, such as aggressiveness, limits the possibility of robust conclusions for these conditions.

The significant heterogeneity among the analyzed studies affects the robustness of the meta-analysis, making it difficult to generalize the findings. Another challenge identified is the dependence on the therapist's skill in interventions with and non-touch, which may impact the consistency of the results and reduce the possibility of replicating the effects in different clinical contexts.

5. Conclusions

Overall, BTs demonstrated moderate effect sizes in both domains, with results suggesting potential clinical benefit, particularly in contexts of chronic pain and stress-related symptoms. However, the marked heterogeneity across studies, in terms of populations, interventions, and outcome measures, limits the generalizability of the findings. While touch-based interventions appeared to produce more consistent outcomes in pain reduction, and non-touch interventions showed promising but more variable effects in psychological domains, these patterns must be interpreted with caution due to methodological diversity and possible publication bias.

Future studies should adopt standardized protocols, ensure rigorous blinding and control conditions, and report detailed methodological procedures, including intervention fidelity and practitioner training. In conclusion, BTs represent a promising area within integrative medicine. While preliminary findings are encouraging, high-quality, large-scale trials are needed to better delineate their efficacy, identify moderators of response, and guide safe and effective integration into clinical care.

CRediT authorship contribution statement

R. S.: Writing – original draft, visualization, software, methodology, investigation, formal analysis, data curation, conceptualization and review. **R. Q**.: review, data curation and supervision. **P.N.G.**: review and data curation.

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Declaration of Competing Interest

The authors declare that no known competing financial interests.

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Table 1

The main characteristics of the included studies.

Study ID	Sample Size		Sex Male/ Famale		Age (M±SD)		Biofield Therapy	Study Population	Treatment Methods		Description of Intervention Protocol	Results
	IG	CG	IG	CG	IG	CG			IG	CG		
Post-White (2003) [17]	56	45	7/49	6/39	NR	NR	Healing Touch	Cancer patients undergoing chemotherapy.	Techniques used: centering, unruffling, magnetic unruffling, full-body connection, mind clearing, chelation, lymphatic drainage. Swedish massage protocol lasting 45 minutes, 4 sessions per week, with relaxing music and a controlled environment.	Same environment and duration (45 minutes), with a professional present, but without therapeutic touch. Participants rested on the massage table.	Total period: 4 weeks. Experimental group (Therapeutic Massage and Healing Touch): 1 session of 45-minute (on the day of treatment). Control group (Presence of caregiver): 1 session of 45-minute session (on the same day).	HT: Reduced fatigue, mood disturbance; MT: Reduced anxiety, pain, mood disturbance; Control: No significant change.
Olson (2003) [16]	11	13	2/9	9/4	NR	NR	Reiki	Patients with advanced cancer	Standard opioid management + Reiki.	Standard opioid management + Rest.	Total period: 1 week. Experimental group (Reiki): 2 sessions of 90 minutes (days 1 and 4). Control group (Rest): 2 sessions of 90 minutes (days 1 and 4).	Reiki improved pain control and quality of life on Days 1 and 4 compared to the rest group. No significant reduction in opioid use was observed over the 7-day period.
Frank (2007) [33]	42	40	0/42	0/40	51.5 ± 11.6	53.0 ± 10.5	Therapeutic Touch	Women undergoing stereotactic core breast biopsy for nonpalpable breast lesions.	Therapeutic Touch (Krieger–Kunz method) Hand movements 2–6 inches from the body, without physical contact. Focus on “reorganizing the energy field”.	Same hand movements, but without therapeutic intent. Practitioners mentally counted backward (without focusing on the patient).	Total period: 1 week. Experimental group (Therapeutic Touch): 1 session of 10 minutes (during the procedure). Control group (Sham TT): 1 session of 10 minutes (simulating TT).	There were no significant diferences between the TT group and the control group regarding the reduction of pain, anxiety or other psychological and physiological parameters.
Potter (2007) [24]	17	15	0/17	0/15	52.0 ± 8.86	51.0 ± 6.19	Reiki	Women undergoing breast biopsy.	Reiki (2 sessions, ~54 min each, pre- and post-biopsy, standardized hand positions).	Conventional care only.	Total period: 1 week. Experimental group (Reiki): 2 sessions of 45 minutes (1 session before and 1 session after the biopsy). Control group (Standard medical care): No additional sessions beyond usual care.	No significant difference in anxiety or depression between Reiki and control groups. Anxiety levels decreased naturally over time.
Tsang (2007) [20]	16	16	3/13	3/13	59.0 ± 15.23	59.0 ± 15.23	Reiki	Cancer patients.	Reiki (7 sessions total, ~45 min each, Usui method, standardized hand positions).	Rest (5 sessions, ~45 min).	Total period: 1 week. Experimental group (Reiki): 5 sessions of 30 minutes (1 per day). Control group (Rest): 5 sessions of 30 minutes (1 per day).	Reiki significantly reduced fatigue ($p < .05$), improved quality of life ($p < .05$), and decreased pain and anxiety compared to the rest condition.
Assefi (2008) [28]	50 (25 Direct + 25 Distant)	50 (25 Direct + 25 Distant)	4/46	4/46	49 ± 13	47 ± 13	Reiki	Adults with fibromyalgia	Reiki (Direct or Distant) by Reiki Masters.	Sham Reiki (Direct or Distant) by Actors.	Total period: 8 weeks. Experimental group (Reiki with touch and distance): 16 sessions of 30 minutes (2 sessions per week). Control group (Sham Reiki with touch and distance): 16 sessions of 30 minutes (2 sessions per week).	Neither touch nor no-touch Reiki significantly improved pain, physical or mental function, or other secondary outcomes compared to control.
Chen (2008) [29]	57 (45 Healer 1 + 12 Healer 2)	49	17/40	13/36	62.9 ± 9.7	62.9 ± 9.2	External Qigong	Adults with knee osteoarthritis.	External Qigong Therapy (EQT) by two Qigong masters.	Sham Qigong by a trained simulator.	Total period: 3 weeks. Experimental group (External Qigong): 5–6 30-minute sessions. Control group (Sham Qigong): 5–6 30-minute sessions.	EQT significantly reduced pain and improved knee function compared to control, especially in patients treated by one of the healers. The effects persisted after 3 months.

Hawranik (2008) [43]	17	18	7/10	6/12	83.3 ± 8.32	80.9 ± 7.41	Therapeutic Touch	Residents of a long-term care facility with Alzheimer's disease	Therapeutic Touch (TT) performed by certified practitioners (nurses with advanced training in TT).	Usual care without additional intervention.	Total period: 5 days. Experimental group (Therapeutic Touch - TT): 5 sessions of 5-7 minutes (1 session per day). Control group (sham TT and usual care): 5 sessions of 5-7 minutes (1 session per day).	Significant reduction in physically nonaggressive behaviors in the TT group compared to simulated TT and usual care. No significant differences in aggressive or verbally agitated behaviors.
MacIntyre (2008) [23]	87	87	18/69	20/67	64 years old (SD not provided)	64 years old (SD not provided)	Healing Touch	Patients undergoing elective coronary artery bypass surgery.	Healing Touch (HT) by certified practitioners.	Standard care.	Total period: 1 week. Experimental group (Healing Touch - HT): 3 sessions of 20 to 60 minutes (1 before surgery, 1 immediately before, and 1 after surgery). Control group (Standard care): No additional sessions beyond standard medical care.	HT group showed significant reductions in anxiety and shorter hospital stays compared to control and visitor groups. No significant differences in pain medication use or incidence of atrial fibrillation.
McCormack (2009) [21]	30	30	11/19	14/16	72.27 years (SD not provided)	71.67 years (SD not provided)	Non-Contact Therapeutic Touch	Elderly patients	Non-Contact Therapeutic Touch (NCTT) by a trained occupational therapy student.	Standard post-surgical care	Total period: 1 week. Experimental group (Non-Contact Therapeutic Touch - NCTT): 1 session of 10 minutes. Control group (Standard care): No additional sessions beyond standard medical care. Placebo group (Metronome sound): 1 session of 10 minutes.	The NCTT group showed a significant reduction in pain intensity ($p < 0.001$) compared to the placebo and control groups. Pain reduction was measured by visual acuity scale (VAS).
Bowden (2010) [40]	18	17	3/15	3/14	23.5 ± 3.1	22.5 ± 3.9	Reiki	Female college students.	The treatment was administered by a Reiki Master, without physical contact, while participants performed self-hypnosis/relaxation exercises.	No Reiki + self-hypnosis/relaxation (mesmo procedimento, sem Reiki)	Total period: 2.5 to 12 weeks). Experimental group (Reiki): 10 sessions of 20 minutes. Control group (No Reiki): 10 sessions of 20 minutes with identical procedures, without sending Reiki.	Reiki group showed significant improvements in stress and health symptoms, while Reiki group showed significant increases in illness symptoms.
Lutgendorf (2010) [35]	21 (randomized) | 17 (completed)	34 (17 RT + 17 UC completed)	0/21	0/39	48.1 ± 16.0	~45.6 ± 11.8 (weighted average)	Healing Touch	Patients with cervical cancer undergoing chemoradiation.	The procedure was performed during chemoradiation treatment.	CG (RT): Relaxation training (progressive relaxation, imagery), 4 sessions/week, ~20–25 min each. CG (UC): Usual care (no additional intervention).	Total period: 6 weeks. Experimental group (Healing Touch): 4 sessions per week, each session lasting 20 to 30 minutes. Control group 1 (Guided relaxation): 4 sessions per week, each session lasting 20 to 25 minutes. Control group 2 (Usual care): No additional sessions beyond standard care.	HT preserved natural killer cell activity (NKCC) during chemoradiation, with significant reductions in depressive mood compared to RT and UC. No effects on quality of life (QOL), treatment delay, or toxicities were observed.
Richeson (2010) [32]	12	8	8/14	8/0	63.8 ± 4.9	63.8 ± 4.9	Reiki	Community-dwelling older adults.	It included advanced Reiki techniques (Nentatsu-ho, Byssen Reikian-ho, Reiji-ho). The atmosphere featured soft music and low lighting.	Waitlist control – participants did not receive Reiki during the study, but were offered sessions after its completion.	Total period: 8 weeks. Experimental group (Reiki): 8 sessions of 45 minutes (1 per week). Control group (Waiting list): No active intervention during the 8 weeks, but with access to Reiki after the end of the study.	The Reiki group showed a significant reduction in pain, depression, and anxiety compared to the control group. There were no significant changes in heart rate or blood pressure.
Vincent (2010) [26]	26	24	7/19	6/18	56.5 years (median) | Range: 27–86 years	56.5 years (median) | Range: 27–86 years	External Qigong	Adults with chronic pain.	Sessions conducted by certified Qigong masters.	Equivalent Attention Time – conversation sessions with the researcher's full attention, of equal duration and frequency.	Total period: 8 weeks. Experimental group (External Qigong - EQT): 4 sessions of 30 minutes (1 per week, for 4 weeks). Control group (Equivalent Attention Span - EAT): 4 sessions of 30 minutes (1 per week, for 4 weeks).	EQT resulted in a significant reduction in pain intensity in weeks 2, 3, and 4 compared to EAT. Pain intensity differences persisted but were not statistically significant at 8-week follow-up.
VanderVaart (2011) [25]	40	40	0/40	0/40	35.1 ± 5.0	32.9 ± 6.0	Reiki	Adults with chronic pain.	Usual care + Distant Reiki (3 sessions, one per day).	Usual care only.	Total period: 3 days. Experimental group (Reiki at a distance): 3 sessions of 20 minutes (1 session per day). Control group (Standard medical care): No additional sessions beyond usual care.	Distant Reiki did not significantly reduce pain compared to the control group. There was a significant reduction in heart rate and systolic blood pressure in the Reiki group, but no effect on opioid use or recovery time.

Lu (2013) [27]	12	7	2/10	1/6	75.7 ± 9.2	82.4 ± 13.5	Healing Touch	Older adults.	Healing Touch (HT) sessions 3x/week for 6 weeks + Standard Care.	Weekly Friendly Visits (FV) for 6 weeks + Standard Care.	Total period: 6 weeks. Experimental group (Healing Touch - HT): 3 sessions per week, lasting 20 to 30 minutes each. Control group (Friendly Visits - FV): 1 weekly session of 20 minutes, focused on friendly conversations, without any therapeutic intervention.	HT significantly improved pain interference, pain intensity, joint stiffness, and joint function compared to FV. Improvements in joint extension and extensor lag were also significant, with sustained effects 3 weeks post-treatment.
Lu (2013) [36]	12	9	3/9	2/7	83.0 ± 8.54	85.22 ± 8.63	Healing Touch	Elderly	The intervention group received weekly Healing Touch sessions and performed the Body Talk Cortices technique daily, in addition to their usual care routine.	Usual Care only	Total period: 6 months. Experimental group (Healing Touch + Body Talk Cortices - HT + BTC): 1 weekly HT session lasting 30 minutes and daily BTC practice performed by patients or caregivers. Control group (Standard care): No additional intervention beyond the usual medical regimen.	Significant improvements in cognitive function, mood, and depression in the treatment group, while the control group showed typical cognitive decline.
Smelson (2013) [38]	51	50	49/2	48/2	36.0 ± 9.4	40.4 ± 11.9	External Qigong	Recently abstinent cocaine-dependent individuals in residential treatment.	A practitioner directs "qi" (bioenergy) toward the patient.	The physical movements of EQT were replicated, but without the intention or the energetic components of the actual practice.	Total period: 2 weeks. Experimental group (External Qigong - EQT): 4–6 sessions of 15 minutes (2–3 sessions per week). Control group (Sham Qigong): 4–6 sessions of 15 minutes (2–3 sessions per week). Control group (Attention Control with Music): 4 sessions of 30 minutes.	EQT marginally significantly reduced craving ($p=0.06$) and depression symptoms ($p<0.05$) compared to the sham group.
Thomas (2013) [42]	12	12	6/6	1/11	31.5 years (median) | Range: 22–44 years	31.4 years (median) | Range: 22–49 years	Healing Touch	Hospitalized adults with sickle cell disease experiencing vaso-occlusive pain episodes.	Healing Touch with Music (HTM), including techniques such as Hand Scan, Chakra Connection, Ultrasound, and Pain Drain.	Attention control with music (ACM) – 30 minutes of music with the researcher present and performing a neutral task (e.g., crossword puzzle).	Total period: 1 week. Experimental group (Healing Touch with Music): 4 sessions of 30 minutes. Control group (Attention Control with Music): 4 sessions of 30 minutes.	Reductions in pain were greater in the HT group, with significant reductions in stress and pain on Day 1 ($p < .01$). No statistically significant difference in physiological measures between groups.
Wong (2013) [18]	6	3	NR	NR	8.83 years (average; standard deviation not reported)	7.33 years (average; standard deviation not reported)	Healing Touch	Pediatric cancer patients.	Sessions conducted by Level 1 HT practitioners (18 hours of training).	Reading or recreational activity appropriate to the age, with the presence of a volunteer (not a practitioner of HT).	Total period: 52 weeks. Experimental group (Healing Touch): 200 sessions of 30 minutes (1 session per day). Control group (Reading/Playful activity): 30 sessions of 30 minutes (1 session per day).	HT group showed significant reductions in pain, stress, and fatigue compared to the reading/activity group.
Demir (2015) [19]	8	10	3/5	8/2	38.62 ± 19.50	28.70 ± 8.88	Reiki	Adults receiving cancer treatment.	Sessions conducted by a Usui Reiki practitioner (Level 2) located more than 8 km away.	Routine medical and nursing care, without additional intervention.	Total period: 1 week. Experimental group (Reiki at a distance): 5 sessions of 30 minutes (1 per night). Control group (Standard medical care): No additional sessions beyond usual care.	The Reiki group showed significant reductions in pain ($p < 0.0001$), stress ($p < 0.001$) and fatigue ($p < 0.001$) compared to the control group.
Midilli (2015) [22]	45	45	0/45	0/45	27.61 ± 4.77	27.61 ± 4.77	Reiki	Postpartum patients.	Sessions applied to 10 body regions for 3 minutes each, by a certified practitioner.	Rest without treatment, under the same conditions of time and environment.	Total period: 2 days. Experimental group: 2 sessions of 30 minutes. Control group (Standard medical care): No additional sessions beyond usual care.	Reiki reduced pain intensity, anxiety levels, and respiratory rate, as well as the need for and number of painkillers. However, it did not affect blood pressure or pulse rate.
Bremner (2016) [30]	11	18	10/1 Transgender (female-identifed)/0	15/0 Transgender/3	51.4 ± 8.3	47.9 ± 8.0	Reiki	Adults living with HIV.	Sessions conducted by a Reiki Master, using traditional hand positions and meditative music.	Participants received a CD of meditative music, without Reiki intervention.	Total period: 10 weeks. Experimental group (Reiki with music): 6 sessions of 30 minutes (1 session per week). Control group (Music only): 6 sessions of 30 minutes (1 session per week).	The Reiki plus music group showed significant reductions in stress and pain compared to the music-only group. Anxiety was also reduced in the Reiki group, while physiological measures such as blood pressure and cortisol showed no significant differences.

Lu (2016) [37]	13	20	9/13	4/7	57.62 ± 7.67	57.25 ± 7.25	Healing Touch	Adult patients.	Daily sessions	Usual care (UC) – nutritional support, pain management, protective isolation, etc.	Total period: 3 weeks. Experimental group (Healing Touch - HT): Daily sessions of 20 to 24 minutes, during the hospitalization period after the transplant. Control group (Relaxation Therapy - RT): Daily sessions of approximately 20 minutes, guided by clinical psychology students.	HT and RT both improved emotional well-being. HT was better tolerated, and the HT group was discharged from hospital on average 2 days earlier than the RT group.
Tabatabaee (2016) [34]	30	30	30 (Men only)	30 (Men only)	NR	NR	Therapeutic Touch	Male cancer patients in remission.	Therapeutic Touch (TT)	Standard medical care (without additional intervention).	Total period: 4 weeks. Experimental group (Therapeutic Touch - TT): 7 sessions of 10 to 15 minutes (3-day interval between sessions). Control group (Standard care): No additional sessions beyond usual care. Placebo group (sham TT): 7 sessions of 10 to 15 minutes, imitating TT movements without therapeutic intent.	TT had a positive impact on pain parameters (general activity, mood, sleep) compared to placebo and control groups ($p < 0.001$).
Çalÿskan (2021) [31]	50	50	44/6	45/5	<65: 30% 66-74: 46% ≥75: 24%	<65: 38% 66-74: 30% ≥75: 32%	Therapeutic Touch	Patients in the chest clinic diagnosed with (COPD).	Therapeutic Touch (TT)	Standard medical care (without additional intervention).	Total period: 3 days. Experimental group (Reiki): 3 sessions of 10 minutes (on consecutive days). Control group (Standard nursing care).	The group was compared to control group following the intervention, the decrease in the levels of anxiety ($p < 0.001$) and increase in the sleep quality ($p < 0.001$) were found to be significant.
Doğru (2021) [39]	32	32	7/25	6/26	21.12 ± 1.62	22.50 ± 4.21	Therapeutic Touch	Nursing and midwifery students.	Therapeutic Touch (TT)	No intervention (only filling out scales)	Total period: 8 days. Experimental group (Therapeutic Touch -TT): 2 sessions per week of 20 minutes (on alternate days). Control group (no intervention).	The TT group was compared to the STT and control groups after the intervention, the decrease in stress levels ($p < 0.001$), fatigue ($p < 0.001$) and daytime sleepiness ($p < 0.001$), and the increase in sleep quality ($p < 0.001$) were considered significant.
Rosamond (2023) [41]	75	75	10/140	10/140	22–29: 56% 30–39: 28% 40–49: 8% 50–59: 6% 60–62: 2%	22–29: 56% 30–39: 28% 40–49: 8% 50–59: 6% 60–62: 2%	Healing Touch	Acute care nurses in a tertiary hospital.	"Noel's Mind Clearing" technique.	Deep Breathing (DB) – Reading about stress management + deep breathing practice.	Total period: 3 months. Experimental group (Healing Touch - HT): Daily 4- to 7-minute sessions conducted by certified HT therapists during the nurses' work shift. Control group (Deep Breathing - DB): Daily 4- to 7-minute sessions of deep breathing and guided self-care.	HT group showed a significant reduction in stress post-intervention and at follow-up ($p = 0.0002$ and $p = 0.0144$). Breathing also improved significantly in the HT group.

Notes: Summary table of characteristics of the 28 trials included in the meta-analysis. NR, not reported.

Abbreviations:

- BTs – Biofield Therapies
- CAM – Complementary Alternative Medicine
- CI - Confidence Interval
- CINAHL – Cumulative Index to Nursing and Allied Health Literature
- CV - Coefficient of Variation
- DCTD – Division of Cancer Treatment and Diagnosis
- EQT – External Qigong
- ES – Effect Size
- HT – Healing Touch
- MD – Difference of Mean
- NA – Not Applicable
- NCCIH – Complementary and Integrative Health
- NCI - National Cancer Institute
- OCCAM – Office of Cancer Complementary and Alternative Medicine
- PEMF – Pulsed Electromagnetic Fields
- RCTs – Randomized Controlled Trials
- SAMD – Symptoms Associated with Mental Disorders
- SD – Standard Deviation
- SE – Standard Error
- TMS – Transcranial Magnetic Stimulation
- TT – Therapeutic Touch
- WHO – World Health Organization