Table 1: Systematic reviews of mindfulness for anxiety and depression

Source: CAM-Cancer Collaboration. Mindfulness for anxiety and depression [online document]. Mindfulness | CAM Cancer, June 2026.

Anxiety and depression			
Review characteristics	**PICO of included studies**	**Results and conclusions**	**Assessment**
Fung JYT, Lim H, Vongsirimas N, & Klainin-Yobas P. (2024). Effectiveness of eHealth mindfulness-based interventions on cancer-related symptoms among cancer patients and survivors: A systematic review and meta-analysis. Journal of Telemedicine and Telecare, 30(3), 451–465. https://doi.org/10.1177/1357633X221078490			
Type of review Systematic review with MA **Studies: n and design** 18 studies; 13 RCTs and 5 quasi-experimental (single-group) studies **Search strategy:** **Databases** PubMed, Embase, Cochrane Library, CINAHL, PsycINFO, MEDLINE, Web of Science, Google Scholar, Clinical Trials Registry, and ProQuest Dissertations and Theses **Dates** Studies published between 2005 and 2020 **Risk of bias assessment** Cochrane Risk of Bias tool (version 1)	**Participants** Over 1,200 participants. The authors did not specify the number of participants included in the SR or the meta-analysis. Adults (≥18 years) who are cancer patients (diagnosed by a physician) or cancer survivors (3–5 years post-diagnosis without recurrence). Ant cancer diagnosis, any stage. **Interventions** eHealth mindfulness-based interventions including: MBSR, mMBSR, eMBSR, MBCT, ACT, (MBCR) Mobile apps (Headspace, Calm, Happier), and Online/videoconference/telephone-based mindfulness programs **Control** UC including anticancer treatment, medical consultation, symptom management, routine psychological care, and/or health education. **Outcome measures** Validated questionnaires measuring anxiety and depression, mindfulness, and	**Results for risk of bias assessment of primary studies included in the review** The overall risk of bias across studies was moderate to high. Performance bias was particularly high or unclear in all studies, largely due to the nature of mindfulness interventions, which makes blinding difficult. Selection bias was also a concern, especially in quasi-experimental (single-group) studies.* **GRADE** The overall quality of evidence was low for the primary outcomes (anxiety and depression) and very low for the secondary outcomes (quality of life and mindfulness). **Results for outcome measures** Small but statistically significant reductions in anxiety and depression among cancer patients and survivors. However, effects on quality of life and mindfulness were inconsistent, with improvements mainly observed at short-term follow-up rather than immediately post-intervention. Anxiety Post-intervention: SMD = −0.28 (−0.49, −0.06), p-value < 0.05 Change scores (pre, post intervention): non-significant Depression Post-intervention: Non-significant Change scores (pre, post intervention: SMD = −0.22 (−0.45, −0.00), p-value < 0.05 All main analyses for QoL and mindfulness were not significant.	**Quality assessment of the SR** Moderate according to AMSTAR2. No publication bias assessment but justified with low number of trials (<10). RoB reported but limited integration into analysis and interpretation of results. **Comments** *Use of RoB for quality-experimental studies is not appropriate. The review is limited by high heterogeneity across studies in interventions and outcome measures, which reduced comparability. Additionally, the overall quality of evidence was low to very low, with concerns about bias and small sample sizes, potential publication bias, and the lack of formal assessment of adverse events.

	QoL (authors did not report specific instruments) **Measure of treatment effect** SMD 95% CI, effect size calculations	**Subgroup analysis** Subgroup analyses were performed based on type of control group, age, and gender, but no consistent significant differences were found across most subgroups. **Adverse events** Adverse events were not assessed **Conclusion** "Our findings suggested that eHealth-MBIs improved anxiety and depression at post-intervention, while the effects on QoL and mindfulness were observed at short-term follow-up assessments."	
Li J, Li C, Puts M, Wu YC, Lyu MM, Yuan B, & Zhang JP. (2023). Effectiveness of mindfulness-based interventions on anxiety, depression, and fatigue in people with lung cancer: A systematic review and meta-analysis. International Journal of Nursing Studies, 140, 104447. https://doi.org/10.1016/j.ijnurstu.2023.104447			
Type of review: Systematic review with MA **Studies: n and design** 25 RCTs; 18 RCTs included in meta-analysis **Search strategy:** **Databases** PubMed, Web of Science, Embase, China Biology Medicine Disc, Wanfang Data, China National Knowledge Infrastructure (CNKI), and China Science and Technology Journal Database. **Dates** From database inception up to 13 April 2022. **Risk of bias assessment** Cochrane Risk of Bias tool (original version)	**Participants** 2,420 participants (1,731 included in the data analysis) Adults diagnosed with lung cancer, regardless of cancer type, type of treatment, or treatment phase. **Interventions** Mindfulness-based interventions (MBIs): MBSR (17 RCTs), MBCT (3 RCTs), MBCR, mindfulness meditation training, and other mindfulness-based programs. **Control** UC including anticancer treatment, medical consultation, symptom management, routine psychological care, and/or health education. **Outcome measures** Validated questionnaires measuring anxiety and depression, and fatigue: HADS, DASS-21, BDI-II, PHQ-9, GAD-7, CES-D, SDS, SAS, HAMA, CFS, PFS-R **Measure of treatment effect** SMD 95% CI, effect size calculations	**Results for risk of bias assessment of primary studies included in the review** The majority of studies had unclear or high risk of bias, mainly due to of lack of blinding, lack of allocation concealment, unclear reporting, and possible selective reporting. **GRADE:** The overall quality of evidence was rated low, mainly because of high risk of bias from lack of blinding, unclear allocation concealment. **Results for outcome measures** All three primary outcomes (anxiety, depression, and fatigue) showed statistically significant improvements favoring MBIs compared with usual care. Anxiety: SMD = −1.15 (−1.36, −0.94), p-value < .001 Depression: SMD = −1.04 (−1.60, −0.48), p-value < .001 Fatigue: SMD = −1.29 (−1.66, −0.91), p-value < .001 **Subgroup analysis** The subgroup analyses found that intervention effects varied depending on the characteristics of the programs and participants. Structured mindfulness programs (such as mindfulness-based stress reduction and mindfulness-based cognitive therapy), shorter intervention durations, recommended daily practice time, and interventions delivered to patients with advanced lung cancer generally showed stronger improvements in anxiety, depression, and fatigue outcomes.	**Quality assessment of the SR**: Moderate to high: Publication bias assessment was limited. **Comments** Although the review itself is of good quality, the findings are limited by low-certainty evidence, methodological weaknesses in the included RCTs such as difficulty in blinding and the variation between interventions. Additional limitations include potential publication bias and the lack of formal assessment of adverse events.

		Adverse events Adverse events were not assessed **Conclusion** "Mindfulness-based interventions may be effective in reducing anxiety, depression, and fatigue in people with lung cancer. Specifically, programs with structured intervention components (e.g., mindfulness-based stress reduction and mindfulness-based cognitive therapy) that lasted less than eight weeks in length and were practiced at home for 45 min per day showed better effects in patients with advanced stage lung cancer than programs with less structured sessions (e.g., mindfulness meditation training) that lasted more than eight weeks in length with more than 45 min of home practice in patients with mixed stages of lung cancer. However, we cannot draw definitive conclusions because the overall quality of the evidence was low, and we still need to be cautious in applying the current evidence."	
Reangsing C, Punsuwun S, & Wongsuraprakit S. (2025). *Effects of mindfulness-based interventions on patients with anxiety in cancer: A systematic review and meta-analysis.* Journal of Integrative and Complementary Medicine, 31(12), 1031–1044. https://doi.org/10.1089/jicm.2024.0943			
Type of review Systematic review with meta-analysis (MA) **Studies: n and design** 26 RCTs **Search strategy** **Databases** Academic Search Complete, CINAHL, Clinical Trials, Cochrane, Mindfulness (SpringerLink), Ovid APA, Ovid Medline, ProQuest & Theses, PubMed, Web of Science, Scopus **Dates** From database inception to February 2024 **Risk of bias assessment** Cochrane Risk of Bias tool RoB 2.0	**Participants** 2,720 participants Adults diagnosed with any type and stage of cancer, including patients assessed for anxiety. The majority of participants were breast cancer patients. **Interventions** Mindfulness-based interventions: - MBSR - MBCT - Adapted MBIs **Control** UC, WLC, no intervention. **Outcome measures** Anxiety instruments: HADS, STAI, GAD, BAI, Zung Self-Rating Anxiety Scale, Hamilton Anxiety Rating Scale, DASS-21, Profile of Mood States, and others	**Results for risk of bias assessment of primary studies included in the review** Overall, the risk of bias was rated as "some concerns" (n=17), followed by high (n=9) and only one low risk (n=1). Most studies were rated as high or with some concerns regarding deviations from the intended intervention and outcome measurement. For the remaining outcomes (randomization process, missing outcome data, and selection of the reported results the risk of bias was assessed as low. **GRADE** The overall GRADE assessment indicated a moderate quality of evidence. Due to concerns such as publication bias, substantial heterogeneity, and inconsistency across studies. **Results for outcome measures** Overall, mindfulness-based interventions significantly reduced anxiety compared with controls receiving no active control intervention. **MBI vs. control groups:** SMD = 0.977 (0.610, 1.345), p <0.001.	**Quality assessment of the SR** Moderate-high according to the AMSTAR 2 checklist. No critical flaws identified but RoB not formally integrated into MA pooled estimates **Comments** Although the SR is of moderate-to-high quality, there is substantial heterogeneity in design, populations, interventions, and outcome measures, small sample sizes, and some concerns/high risk of bias in the included studies. While the authors conducted moderator analyses, they did not conduct sensitivity analyses based on these moderators. Only a few studies included patients who were clinically diagnosed with anxiety.

	Measure of treatment effect SMD 95% CI	**Subgroup analysis** Stronger effects observed in community settings and among participants with diagnosed anxiety. **Adverse events** The authors stated that most included studies did not assess adverse events. Only one study mentioned minor participant discomfort during assessment. **Conclusion** "We supply evidence, …, that MBIs improve anxiety symptoms in adults living with cancer, especially patients with cancer who also have mild-to-moderate levels of anxiety. … With no reports on the intervention-related side effects and a low quality of evidence, further research is needed."	
Stanerová E, Zelenayová V, & Rajčáni J. (2025). *Mindfulness-based interventions for cancer patients in standard treatment: A meta-analysis of effects on depression, anxiety, and quality of life*. Journal of Psychosomatic Research, 196, 112312. https://doi.org/10.1016/j.jpsychores.2025.112312.pdf)			
Type of review Systematic review with MA **Studies: n and design** 23 studies total; included (17 RCTs and 6 non-randomized controlled studies. **Search strategy:** PubMed, Scopus, PsycINFO, and Web of Science **Dates** From database inception up to July 25, 2023 **Risk of bias assessment** Cochrane Risk of Bias tool RoB 2.0	**Participants** 1,856 participants Adults diagnosed with cancer currently or in the past, regardless of cancer type, stage, type of treatment, or treatment phase. The majority of participants were breast cancer patients. **Interventions** Mindfulness-based interventions (MBIs): MBSR, MBCT, Guided Self-Help MBI **Control** UC, WLC, and active controls. **Outcome measures** Validated questionnaires measuring anxiety and depression and Quality of life: FACT-G, FACT-B, FACIT-Pal, HADS, DASS-21, BDI-II, BAI, PHQ-9, GAD-7, STAI, CES-D, SDS, SAS, QLQ-C30 **Measure of treatment effect** SMD 95% CI, effect size calculations	**Results for risk of bias assessment of primary studies included in the review** None of the included studies (RCTs or non-RCTs) were assessed as having a low overall risk of bias. Most studies had methodological limitations, particularly in blinding and outcome assessment, which increased the risk of bias. **GRADE** Assessment indicated that the overall quality of evidence was low across all outcomes due to concerns about risk of bias and substantial heterogeneity among studies. **Results for outcome measures** Subgroup analysis for RCTs Depression: SMD =- 0.705 (-0.895, -0.515), p=0.010 Anxiety: SMD = - 0.64; 95 % CI (- 0.83, - 0.46), p = 0.000 Quality of Life: not significant Mindfulness-based interventions were found to significantly improve quality of life and reduce symptoms of depression and anxiety in cancer patients. The overall findings indicate consistent, moderate beneficial effects across all three primary outcomes, supporting the effectiveness of these interventions during or shortly after treatment. **Subgroup analysis**	**Quality assessment of the SR** Moderate to high. Publication bias investigated but not statistically assessed. **Comments** The positive findings of the review are limited by the moderate to high risk of bias in included studies, substantial heterogeneity, resulting in an overall low certainty of evidence. Additional limitations include potential publication bias and the lack of formal assessment of adverse events.

		Subgroup analyses showed that outcomes varied depending on the type of mindfulness intervention, with structured programs generally producing stronger effects. No meaningful differences were found across cancer diagnoses, suggesting similar benefits regardless of cancer type. Additionally, randomized controlled trials tended to produce more robust and consistent results compared to non-randomized studies. **Adverse events** Adverse events were not assessed. **Conclusion** "This review found that MBIs reduced symptoms of depression, anxiety and CRF in oncology populations."	

Systematic reviews excluded from the evidence summary due to low quality

Ajele, KW, & Idemudia, ES (2026). *Mindfulness-based interventions for depression, anxiety, and stress in adults with cancer: A stratified subgroup meta-analysis*. Psycho-Oncology, 35, e70424. https://doi.org/10.1002/pon.70424

Type of review Systematic review with MA **Studies: n and design** 45 RCTs **Search strategy** **Databases** Web of Science, Scopus, ScienceDirect, and EBSCOhost (including MEDLINE, CINAHL, and APA PsycInfo **Dates** January 2010 to July 2025 **Risk of bias assessment** Cochrane Risk of Bias tool RoB 2.0	**Participants** 7,395 participants Adults diagnosed with cancer regardless of cancer type, stage, type of treatment, or treatment phase. The majority of participants were breast cancer patients. **Interventions** Mindfulness-based interventions (MBIs): MBSR 36 RCTs, MBCT 17 RCTs, and adapted/modified MBIs 32 RCTs (some studies contributed to multiple categories) **Control** UC, WLC, attention control, and active controls. **Outcome measures** Validated questionnaires measuring anxiety and depression: HADS, BDI-II, GAD-7, PHQ-9, DASS-21, PSS, CES-D Measure of treatment effect SMD 95% CI, effect size calculations	**Results for risk of bias assessment of primary studies included in the review** Overall, most of the studies included were rated as low risk of bias. However, some concerns and high-risk ratings were present, especially in the domains of randomization processes and outcome measurement. Sensitivity analyses suggested that the overall findings were robust and not substantially influenced by high-risk studies. **GRADE** No GRADE assessment was conducted. **Results for outcome measures** Depression: SMD = −0.92 (−1.31, −0.53), p <0.05 Anxiety SMD = −1.06 (−1.67, −0.46), p < 0.05 Stress SMD = −1.50 (−2.48, −0.51), p < 0.05 **Subgroup analysis** Mindfulness-based interventions generally produced stronger outcomes than standard programs, and breast cancer populations benefited the most. Effects were also influenced by factors such as region, intervention duration, and dropout rates, indicating variability in effectiveness across contexts. Overall, results suggest that both intervention characteristics and participant factors moderate treatment outcomes. **Adverse events** Adverse events were rarely monitored, and none reported intervention-related harm. **Conclusion** “Mindfulness-based interventions were associated with reduced depression, anxiety, and stress in adults with cancer. However, heterogeneity was high, most trials involved breast cancer survivors, and comparisons across MBI types were indirect. Adverse events were infrequently reported, limiting conclusions about potential risks. Broader generalization across cancer types remains premature. These findings support MBIs as part of	**Quality assessment of the SR** Low due to the lack of registration of the protocol. **Comments** The review is limited by high heterogeneity across studies and an overrepresentation of breast cancer populations, reducing generalizability. Additionally, inconsistent reporting, possible publication bias, lack of GRADE assessment, and minimal data on adverse events weaken confidence in the findings.

		tailored psychosocial care while underscoring the need for more diverse and rigorously controlled trials."	

Birling Y, Bhuyan DJ, Feng F, Jia M, Liu J, Zhang H, Rahimi M, Yu WY, Carlson LE, Boge HB, Jasim N, Jaye K, Dissanayake IH, Nevitt S, Lacey J, Hoenders R, Tang C, Tram T, & Fahey PP. (2026). *Mind-body therapies for depression and anxiety symptoms in people with cancer: A systematic review with network meta-analysis*. Current Oncology Reports, 28, 52. https://doi.org/10.1007/s11912-026-01790-7

Type of review and data synthesis Systematic review with network meta-analysis. **Studies: n and design** 182 RCTs thereof 58 of MBIs. **Search strategy:** **Databases** Embase, PubMed, Cinahl, Cochrane Library, PsycINFO, IndMED, CSIR-NISCAIR, CNKI, ClinicalTrials.gov, ChiCTR, CTRI **Dates** From database inception to October 2020 (initial search), with updates in August 2022, August 2023, and February 2025. **Risk of bias assessment** Cochrane Risk of Bias tool RoB 2.0	**Participants** 16,835 participants Adults (≥18 years) with a medically confirmed cancer diagnosis. **Interventions** MBIs: 58 RCTs; Music therapy: 36 RCTs; Yoga n=26; Qigong/Tai Chi n=12; Relaxation: multiple groups; others (e.g., biofeedback, spiritual interventions) fewer trials (often 1–2 groups each) **Controls** UC, WLC, and active controls (exercise, psychoeducation, sham MBTs, or other MBTs). **Outcome measures** Validated questionnaires measuring anxiety and depression: HADS, STAI-Y, BDI-II, GAD-7, PHQ-9, DASS-21, **Measure of treatment effect** SMD 95% CI	**Results for risk of bias assessment of primary studies included in the review** Results for risk of bias refer to all mind-body therapies; a separate analysis for mindfulness only is not available. In the 61 studies in which MBT was compared to an active control, the overall risk of bias was 'low' in 9 studies, 'some concerns' in 44 studies, and 'high' in 8 studies. Concerns over bias were mainly concentrated in the measurement of the outcome, with only 15 studies having a low risk of bias. All 139 comparisons of MBT with an inactive control (e.g. UC, WCL) had a high overall risk of bias due to the lack of blinding. **GRADE** No CINeMA or GRADE assessment was conducted. **Results for outcome measures** Depression symptoms - overall vs inactive control Mind-body therapies (overall): SMD = −0.58, 95% CI (−0.74, −0.41), p-value < 0.001 Network meta-analysis vs usual care Biofeedback SMD = −1.18 (−2.30, −0.06), p-value = 0.038, SUCRA = 0.83 MBIs: SMD = −0.87 (−1.13, −0.61), p-value < 0.001, SUCRA = 0.78 Spiritual interventions: SMD = −0.98 (−1.95, −0.01), p-value = 0.047, SUCRA = 0.76 Yoga: SMD = −0.68 (−1.08, −0.27), p-value = 0.001, SUCRA = 0.64 Physical relaxation: SMD = −0.59 (−1.11, −0.07), p-value = 0.026, SUCRA = 0.58 Music therapy: SMD = −0.56 (−0.95, −0.16), p-value = 0.006, SUCRA = 0.56 Integrative relaxation: SMD = −0.71 (−1.23, −0.20), p-value = 0.006, SUCRA = 0.66 Anxiety symptoms - Overall vs inactive control Mind-body therapies (overall): SMD = −0.74 (−0.92, −0.57), p-value < 0.001 Yoga: SMD = −1.13 (−1.60, −0.67), p-value < 0.001, SUCRA = 0.80 (MBIs: SMD = −1.02 (−1.30, −0.74), p-value < 0.001, SUCRA = 0.75	**Quality assessment of the SR** Low according to AMSTAR2. The risk of bias was not incorporated into analysis. The heterogeneity of the included studies was very high ($I^2 \approx 90\%$) and not adequately resolved. **ROB-NMA Confidence in findings:** No CINeMA/GRADE assessment but three domains with major concerns: within-study bias, reporting bias and heterogeneity/ inconsistency plus some concerns for indirectness and imprecision. Resulting in very low confidence in relative treatment rankings. Comments The study used a large dataset, appropriate NMA methods (SUCRA, network structure, inconsistency testing). However, the study did not assess certainty of evidence (no GRADE or CINeMA), the risk of bias was not incorporated into analysis, the heterogeneity of the included studies was high which was not adequately resolved Authors acknowledge "potential risk of bias in most of the studies" but no structured integration (e.g. sensitivity analysis, RoB-stratified results). Broad, potentially non-transitive network. Limited handling of imprecision and small-study effects

		Physical relaxation: SMD = −0.93 (−1.38, −0.47), p-value < 0.001, SUCRA = 0.68 Music therapy: SMD = −0.90 (−1.17, −0.62), p-value < 0.001, SUCRA = 0.65 Qigong/Tai Chi: SMD = −0.90 (−1.51, −0.29), p-value = 0.004, SUCRA = 0.64 Imagery/visualization: SMD = −0.72 (−1.42, −0.02), p-value = 0.044, SUCRA = 0.52 Integrative relaxation: SMD = −0.69 (−1.17, −0.21), p-value = 0.005, SUCRA = 0.49 Subgroup analysis Mind-body therapies tended to be more effective in patients with clinically significant depression or anxiety, mixed-sex samples, and certain cancer types (e.g., lung or blood cancers), while effects were smaller in breast cancer populations and those without clinical symptoms. Intervention characteristics also influenced outcomes, with higher total exposure, higher session frequency, supervised delivery, and in-person formats generally associated with greater effectiveness. **Adverse events** The authors did not assess adverse events **Conclusion** "In conclusion, the most effective MBTs are biofeedback, spiritual interventions and MBIs for depression symptoms and yoga, MBIs, physical relaxation, qigong/Tai Chi and music therapy for anxiety symptoms in people with cancer. … We recommend to clinicians to avoid MBT interventions with a low session frequency, a very short total exposure, and a long duration, and remote interventions."	

Chayadi E, Baes N, & Kiropoulos, L. (2022). *The effects of mindfulness-based interventions on symptoms of depression, anxiety, and cancer-related fatigue in oncology patients: A systematic review and meta-analysis.* PLOS ONE, 17(7), e0269519. https://doi.org/10.1371/journal.pone.0269519			
Type of review: Systematic review with MA **Studies: n and design** 16 RCTs 20 non-RCTs **Search strategy:**	**Participants** 1,677 participants Adults diagnosed with cancer currently or in the past, regardless of cancer type, stage, type of treatment, or treatment phase. The majority of participants were breast cancer patients.	**Results for risk of bias assessment of primary studies included in the review** Overall, the included studies were assessed as having low to moderate risk of bias.* Most RCTs demonstrated either low risk or some concerns, with only one study rated as high risk; the concerns were mainly due to randomization. Non-randomized studies showed greater variability, with the majority rated as moderate risk	**Quality assessment of the SR** Low, one critical flaw: inadequate integration of risk of bias into interpretation and synthesis. Several non-critical flaws. **Comments** *Two RoB domains were judged low risk for every single study: deviations from intended interventions and measurement of the

PsycINFO, PubMed, Embase, MEDLINE, and ProQuest Dissertations & Theses Global **Dates** January 2000 to February 2022 **Risk of bias assessment** Cochrane Risk of Bias tool RoB 2.0 Non-randomized studies: ROBINS-I tool	**Interventions** Mindfulness-based interventions (MBIs): MBSR 13 RCTs, MBCT 3 RCTs, no RCTs for MBCR **Control** UC, WLC, and psychoeducation. **Outcome measures** Validated questionnaires measuring cancer-related fatigue, anxiety, and depression: authors did not specified instruments **Measure of treatment effect** SMD 95% CI, effect size calculations	**GRADE** No GRADE assessment was conducted. **Results for outcome measures** Results for effect sizes of RCTs (subgroup analysis) Anxiety Post-intervention: SMD = 0.56 (0.35, 0.77), p < 0.01 Follow-up ≥3 months: SMD = 0.58 (0.21, 0.95), p < 0.01 De**pression** Post-intervention: SMD = 0.43 (0.13, 0.72), p < 0.01 Cancer-related fatigue Post-intervention: SMD = 0.42 (0.18, 0.66), p < 0.01 Follow-up ≥3 months: SMD = 0.33 (0.18, 0.47), p < 0.01 Mindfulness-based interventions were found to improve anxiety, depression, and cancer-related fatigue in cancer patients, with consistent benefits observed immediately after the intervention and, for most outcomes, maintained over time. Improvements were most consistent for anxiety and fatigue, while effects on depression were less sustained in longer-term comparisons with control groups. **Subgroup analysis** Effectiveness varied by intervention type, with Mindfulness-Based Stress Reduction demonstrating the most consistent benefits across outcomes, while Mindfulness-Based Cognitive Therapy showed strong effects for some symptoms but less consistent results overall. However, conclusions for certain interventions were limited due to the smaller number of studies available. **Adverse events** Adverse events were not assessed **Conclusion** "This review found that MBIs reduced symptoms of depression, anxiety and CRF in oncology populations."	outcome. An intervention that cannot be blinded and uses subjective outcome measures is according to Cochrane RoB standards not considered "low risk of bias". The review is limited by high heterogeneity across studies. Additionally, lack of GRADE assessment, and adverse events weaken confidence in the findings.
Li Z, Lei D, Ting L, Yao R, Jing W, & Na M. (2024). The impact of mindfulness intervention on negative emotions and quality of life in malignant tumor patients: A systematic review and meta-analysis. Frontiers in Psychology, 15, 1443516. https://doi.org/10.3389/fpsyg.2024.1443516			
Type of review Systematic review with MA **Studies: n and design**	**Studies and participants** 993 participants	**Results for risk of bias assessment of primary studies included in the review** Overall, the included studies were judged to have a generally moderate risk of bias. Domains such as randomization, outcome	**Quality assessment of the SR:** Low due to no registration of a protocol and partial discussion of publication bias assessment (lack of publication bias for depression). RoB

11 RCTs studies **Search strategy:** **Databases** CNKI, VIP, Wanfang, Chinese Biomedical Literature Database (CBMdisc), PubMed, Embase, Cochrane Library, Web of Science (WoS) **Dates** From database inception to January 2024 **Risk of bias assessment** Cochrane Risk of Bias tool RoB (version 1)	Adults (≥18 years) with malignant tumors, regardless of tumor type or stage **Interventions** Mindfulness-based interventions including: MBSR, MBCT, mindfulness meditation, combined interventions (e.g., mindfulness + exercise, psychological therapies) **Control** UC or conventional interventions (e.g., health education, psychological support, social/family support) **Outcome measures** Validated questionnaires measuring anxiety, depression, and QoL QLQ-C30, SF-36, FACT, SAS, SDS, HADS; Secondary: BAI, BDI, PSQI, VAS **Measure of treatment effect** SMD 95% CI, effect size calculations	reporting, and data completeness generally reported low risk. Allocation concealment and blinding were assessed "unclear"*. **GRADE** No GRADE assessment was conducted. **Results for outcome measures** The review found that mindfulness-based interventions produced significant improvements; they reduced anxiety and depression symptoms with large effect sizes and improved quality of life with a moderate effect. Anxiety SMD = −0.81 (−1.01, −0.60), p < 0.00001 Depression SMD = −0.86 (−1.01, −0.70), p < 0.00001 Quality of life SMD = 0.64 (0.50, 0.78), p < 0.00001 **Subgroup analysis** They found that effectiveness varied depending on the assessment tools, the type of mindfulness intervention, and the cancer type. Additionally, certain cancer groups (e.g., breast cancer patients) appeared to benefit more consistently than others. **Adverse events** Adverse events were not assessed **Conclusion** "In summary, positive thinking interventions have a significant positive impact on anxiety, depression, and quality of life in patients with malignant tumors. However, differences in assessment tools, choice of intervention, and tumor type largely determined the heterogeneity of the findings. In future studies, it is crucial to address these influencing factors in depth."	was assessed but not adequately: overly optimistic* and not integrated in interpretation of results. **Comments** The positive conclusion of the authors does not take into account any limitations / RoB of the included studies. *Risk-of-bias assessment is methodologically weak and likely overly optimistic; over-simplified judgements (e.g., "all studies randomised = low risk"), blinding and allocation concealment inadequately handled, very limited use in synthesis and not used in interpretation of findings. The review is limited by high heterogeneity across studies in the intervention types, duration, and measurement tools, which reduced comparability. Furthermore, it is limited by short follow-up periods and methodological weaknesses (e.g., lack of blinding) in the included studies, restricting the strength and generalizability of conclusions, small sample sizes, potential publication bias, and the lack of formal assessment of adverse events and GRADE.

Xu, L., Guan, A, & Huang, Y. (2025). *Effects of online mindfulness-based interventions on mental and physical health outcomes in cancer patients: A systematic review and meta-analysis of randomized controlled trials* Medicine (Baltimore) 104(12), e41870. https://doi.org/10.1097/MD.0000000000041870

Type of review Systematic review with MA **Studies: n and design** 14 RCTs	**Participants** 1,316 participants Adults (≥18 years) diagnosed with cancer. **Interventions**	**Results for risk of bias assessment of primary studies included in the review** For random sequence generation, allocation concealment, incomplete outcome data, selective reporting, and other bias, the majority of the studies were rated as low risk of bias. Regarding	**Quality assessment of the SR** Low quality according to AMSTAR 2 checklist. Due to the unclear reporting of publication bias and RoB not incorporated in interpretation or analysis.

Search strategy: **Databases** Web of Science, PubMed, ScienceDirect, Cochrane Library, and Embase **Dates** From database inception to April 2023 **Risk of bias assessment** Cochrane Risk of Bias tool RoB 2.0	Internet-based mindfulness interventions: MBSR (3 RCTs), MBCT (5 RCTs), other MBIs (6 RCTs) **Controls** No intervention and WLC (8 RCTs), and active controls (psychoeducation or health education, 6 RCTs). **Outcome measures** Anxiety and depression measured with validated tools: HADS, STAI-Y, BDI-II, GAD-7, PHQ-9, DASS-21, **Measure of treatment effect** SMD 95% CI	blinding of participants and personnel, many studies (10 RCTs) were rated as high risk of bias. Eight RCTs were rated as unclear risk for blinding of outcome assessment. **GRADE** The overall quality of evidence was rated as moderate to low using the GRADE approach, with primary outcomes (anxiety, depression, stress) downgraded to low certainty. Results for outcome measures Online mindfulness-based interventions significantly reduced anxiety but did not show a significant effect on depression in cancer patients. Anxiety: SMD = −0.30 (−0.59, −0.01)*, p =0.04, low certainty Depression: SMD = −0.04 (−0.32, 0.23), p = 0.75, low certainty **Subgroup analysis** No subgroup analysis was conducted **Adverse events:** The authors did not assess adverse events **Conclusion** "Online MBIs may be effective in the reduction of psychological distress and other symptoms in cancer patients. However, in view of the limitations of the current study, more rigorously designed RCTs will be needed in the future."	**Comments** The conclusions of this SR are limited by the high heterogeneity in interventions, populations, and outcome measures. The SR had a small sample size. Adverse event assessment was not conducted. *after removing outlier study.

Wang S, Xia W, Zhang J, Wu, M., & Tian, L. (2025). *Effects of internet-based mindfulness interventions on anxiety and depression symptoms in cancer patients: A meta-analysis*. General Hospital Psychiatry, 94, 126–141. https://doi.org/10.1016/j.genhosppsych.2025.02.022

Type of review Systematic review with MA. **Studies: n and design** 10 RCTs. **Search strategy** Databases Cochrane Library, PubMed, Embase, Web of Science, PsycINFO, CNKI, Wanfang, VIP, and Chinese Biomedical Database (CBM)	**Participants** 1,314 participants. Adults (≥18 years) with cancer experiencing symptoms of anxiety and/or depression; no restrictions on gender, ethnicity, cancer type, stage, or treatment status The majority of participants were breast cancer patients. **Interventions** Internet -based mindfulness interventions:	**Results for risk of bias assessment of primary studies included in the review** Overall, the risk of bias was rated as "some concerns" for most studies; two studies were rated as high risk of bias, and one was rated as low risk of bias. * For deviations from the intended intervention, missing outcome data, and selection of the reported results domains, the majority of studies were rated as having a "low" risk of bias. For the measurement of the outcome and the randomization process, most studies were rated as having "some concerns".** **GRADE** No GRADE assessment was conducted.	**Quality assessment of the SR** Low quality according to AMSTAR 2 checklist. No protocol registered. Limited integration of the risk of bias in the analysis and interpretation of the findings in the discussion. **Comments** *RoB is outcome-specific but was only reported a study level. **Concerns about RoB assessment with subjective PRO outcome and no blinding. According to RoB2 this is high!

Dates From database inception to December 2023 **Risk of bias assessment** Cochrane Risk of Bias tool RoB 2	eMBCT, eMBSR, eACT, eMBCR, Integrated mindfulness + cognitive therapy interventions **Control** UC, WLC, health education, routine nursing guidance, face-to-face MBCT, pain psychoeducation, and couple-based mindfulness interventions. **Outcome measures** Anxiety and depression HADS, STAI-Y, BDI-II, GAD-7, PHQ-9, DASS-21, PROMIS **Measure of treatment effect** SMD 95% CI, effect size calculations	**Results for outcome measures** Internet-based mindfulness interventions (eMBIs) show small but significant effects on both anxiety and depression. Anxiety: SMD = 0.32 (−0.44, −0.21) $p < 0.01$ Depression: SMD = 0.30 (−0.42, −0.18) $p < 0.01$ **Subgroup analysis** Interventions with therapist guidance—especially those involving real-time (synchronous) interaction—were more effective, while self-guided or non-interactive formats were less effective. Shorter programs and sessions produced better outcomes, and improvements were mainly evident in the short term, with limited sustained effects over time. **Adverse events** The authors stated that most included studies did not assess adverse events. Only one reported an adverse event unrelated to the intervention. **Conclusions** “eMBIs are effective in alleviating anxiety and depression among cancer patients, which could persist for three months post-intervention. The manner in which patients interact with therapists may impact treatment outcomes, with synchronous online engagement appearing to be particularly effective. Optimizing the intervention involves limiting session durations to 45 min and maintaining the overall intervention duration within 8 weeks, which could enhance the effectiveness of the intervention..”	No GRADE assessment conducted. The included studies had high heterogeneity in cancer type, stages, interventions, and outcome measures.

Abbreviations

CI: confidence interval
MA: Meta-analysis
RCT: randomized controlled trial
RoB: Cochrane Risk of Bias Tool version 1
RoB2: Cochrane Risk of Bias Tool version 2
SMD: standardized mean differences
SR: systematic review

ACT: Acceptance and Commitment Therapy
BAI: Beck Anxiety Inventory
BDI-II: Beck Depression Inventory
CBT: Cognitive behavioral therapy
CES-D: Center for Epidemiologic Studies Depression Scale
DASS: Depression Anxiety Stress Scale
EORTC QLQ-C30– European Organization of Research and Treatment of Cancer Quality of Life Questionnaire
GAD: Generalized Anxiety Disorder scale
HADS: Hospital Anxiety and Depression Scale
MAPS: mindful awareness practices
MBAT: mindfulness-based art therapy
MBCR: - Mindfulness-Based Cancer Recovery
MBCT Mindfulness-Based Cognitive Therapy
MBSR Mindfulness-Based Stress Reduction
NRS: Numeric Rating Scale
PHQ: Patient Health Questionnaire
PSS: Perceived Stress Scale
PROMIS: Patient-Reported Outcomes Measurement Information System
STAI: State-Trait Anxiety Inventory
SUCRA: Surface Under the Cumulative Ranking Curve
UC: Usual care
VAS: Visual Analog Scale
WLC: Waitlist control
WMD: Weighted mean difference.

***AMSTAR 2 Critical Domain Items**

1. Was the review protocol established a priori (e.g., registered in PROSPERO)?
2. Was the search comprehensive and included multiple databases, grey literature, and appropriate search strategies?
3. [Did the authors provide a list of excluded studies and justify the exclusions?]
4. Was the risk of bias (RoB) of included studies assessed using appropriate tools?
5. If a meta-analysis was conducted, were the methods used appropriate and clearly described?
6. Did the authors consider the RoB in individual studies when discussing the results?
7. Was publication bias assessed and discussed appropriately?