

Effects of Cognitive-Behavioral Therapy for Insomnia Compared with Controls Among Cancer Survivors: A Systematic Review and Meta-analysis of Randomized Trials

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Background

- Insomnia is highly prevalent among cancer survivors (up to 70%)¹
- Insomnia in cancer survivors has complex biological, behavioral, physiological, psychological, and treatment-related causes².
- Insomnia can lead to daytime fatigue, social and cognitive dysfunction, and impaired health-related quality of life (HRQL)³.
- CBT-I is the recommended first-line non-pharmacological treatment for insomnia⁴.
- Prior meta-analyses focused on within-group changes, with calls to better evaluate treatment effects compared to controls^{5,6}.

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Objectives

- To conduct a systemic-review and meta-analysis and evaluate the effects of cognitive-behavioral therapy for insomnia (CBT-I) among cancer survivors, compared with controls, on insomnia.

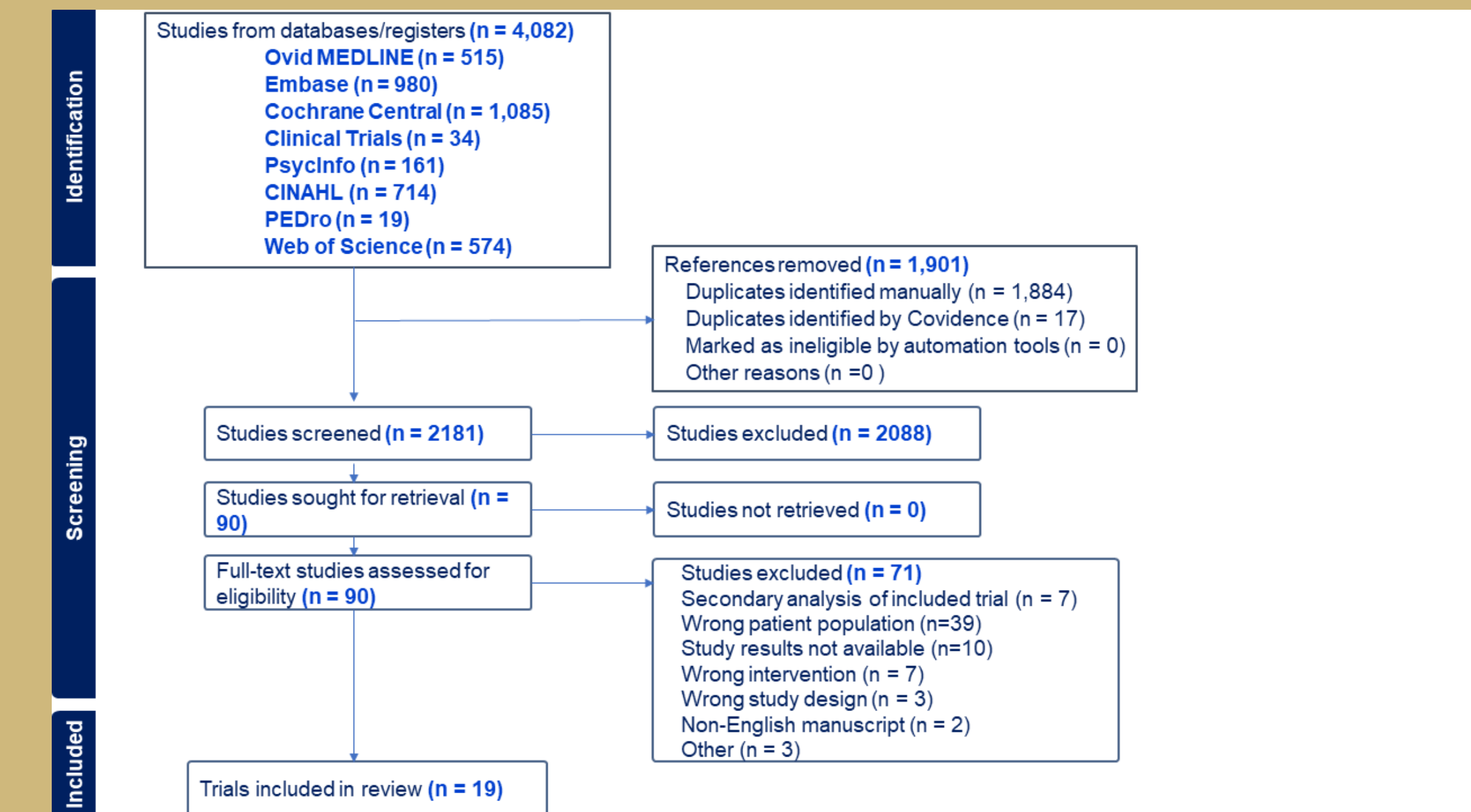
Methods

- Comprehensively searched 8 databases (CINAHL/ClinicalTrials.gov/ Cochrane Central/Embase/MEDLINE/PEDro/Psyc hInfo/Web of Science)
- Included randomized controlled trials (RCTs) in which adult cancer survivors with clinically-significant insomnia were randomized to CBT-I or control conditions.
- Primary outcome: end-of-intervention Insomnia Severity Index (ISI).
- Secondary outcomes: sleep diary parameters, fatigue, and health-related quality of life (HRQL).
- Analyzed between-group mean differences (MD's), standardized-mean-differences (SMD's), and interpreted results using guideline-endorsed, minimal clinically important difference (MCID) or SMD thresholds.

Results

- Included 19 RCTs involving 1,803 participants.
- Participant mean age was 55 and time-since-diagnosis was 2.5 years; 95% were women, mostly survivors of breast cancer.
- At end-of-intervention, compared with controls, CBT-I improved ISI [MD (95% CI): -4.4 (-5.3, -3.5) points; that did not reach the MCID threshold (i.e., ≥ 6 points), but is higher than half of the minimal-important-change (i.e., 3-<6 points, including 95% CI), suggesting that an appreciable number but not many patients derived clinically-important benefit.
- Subjective sleep diary sleep latency, wake after sleep onset, sleep efficiency, fatigue, and HRQL were also improved; however, on average, none of the improvements reached their respective MCID or SMD thresholds to suggest that many patients derived clinically-important benefits.
- In pre-specified subgroup analyses, no intervention or cancer-related characteristics meaningfully changed results. Evidence certainty was low-to-very-low, primarily due to heterogeneity, performance, publication, and/or reporting bias.

Results



Study or Subgroup	Intervention Mean [points] SD [points]	Control Mean [points] SD [points]	Total	Weight	Mean difference IV, Random, 95% CI	Mean difference IV, Random, 95% CI
Cassault 2015	5.32 2.93	11.31 5.52	17	5.2%	-5.99 [-8.90, -3.08]	
Dean 2020	6.94 5.27	15.07 4.42	16	4.2%	-8.13 [-11.60, -4.66]	
Dirken 2008	14.38 5.31	16.31 5.03	34	6.3%	-1.93 [-4.33, 0.47]	
Gonzalez 2022	7.8 3.75	13.33 6.69	14	3.8%	-5.53 [-9.52, -1.54]	
Hall 2022	9.34 4.2	15 4.2	19	5.7%	-5.66 [-8.33, -2.99]	
Matthews 2014	9.03 4.38	11.37 4.38	30	6.5%	-2.34 [-4.64, -0.04]	
Palesh 2018	9.5 5.1	11.5 6.7	34	5.5%	-2.00 [-4.76, 0.76]	
Palesh 2020	8.185 6.1	10.916 6.1	31	5.0%	-2.73 [-5.72, 0.26]	
Ritterband 2012	8.2 3.97	14.4 3.85	13	5.0%	-6.20 [-9.21, -3.19]	
Roscoe 2015	5.61 4.56	10.47 4.58	19	5.1%	-4.86 [-7.81, -1.91]	
Savard 2005	7.57 5.25	13.7 5.09	27	5.6%	-6.13 [-9.82, -2.44]	
Savard 2014	5.9 4.4	11.2 4.35	70	9.0%	-5.30 [-7.72, -2.88]	
Savard 2016	8.3 4.43	11.2 4.35	57	8.7%	-2.90 [-4.41, -1.39]	
Zachariae 2018	7.1 4.4	12.6 5.3	103	9.2%	-5.70 [-7.04, -4.36]	
Zhang 2019	10.82 5.68	15.42 5.9	31	5.3%	-4.60 [-7.44, -1.76]	
Zhao 2020	12.65 2.86	15.48 2.93	65	10.2%	-2.83 [-3.82, -1.84]	
Total (95% CI)			580	615 100.0%	-4.37 [-5.26, -3.48]	

Heterogeneity: $\tau^2 = 1.74$; $\chi^2 = 38.49$, $df = 15$ ($P = 0.0008$); $I^2 = 61\%$
Test for overall effect: $Z = 9.69$ ($P < 0.00001$)
Test for subgroup differences: Not applicable

CONCLUSIONS

Compared with controls, CBT-I improved insomnia among an appreciable number but not many cancer survivors. Strategies are needed to improve insomnia for many cancer survivors, particularly among non-responders to first-line CBT-I.

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