SUPPLEMENTAL MATERIALS – Behavioral and Psychological Treatments for Chronic Insomnia Disorder in Adults Guideline Meta-Analyses and Summary of Findings Tables

All Literature Search Terms

PICO 1 PubMed Search String:

(("Sleep Initiation and Maintenance Disorders" [MeSH Terms] OR "sleep initiation and maintenance disorders" [All Fields] OR "insomnia" [All Fields]) NOT "Insomnia, Fatal Familial"[MeSH Terms]) AND "humans"[MeSH Terms] AND "adult"[MeSH Terms] AND ("behavior therapy"[MeSH Terms] OR "behaviour therapy"[All Fields] OR "behavior therapy"[All Fields] OR "psychotherapy"[MeSH Terms] OR "psychotherapy"[All Fields] OR "psy "biofeedback, psychology"[MeSH Terms] OR "biofeedback"[All Fields] OR "psychology biofeedback"[All Fields] OR "biofeedback, psychology"[All Fields] OR "body monitoring" [All Fields] OR "BBTI" [All Fields] OR "behavioral treatment" [All Fields] OR "cognitive therapy" [MeSH Terms] OR "cognitive therapy"[All Fields] OR "cognitive behaviour therapy"[All Fields] OR "cognitive behavior therapy"[All Fields] OR "cognitive behavior therapies"[All Fields] OR "cognitive behavioral therapy for insomnia" [All Fields] OR "CBT-I" [All Fields] OR "CBT-Insomnia" [All Fields] OR "sleep retraining" [All Fields] OR "mindfulness" [MeSH Terms] OR "mindfulness" [All Fields] OR "multicomponent behavioral therapy" [All Fields] OR "relaxation therapy" [MeSH Terms] OR "relaxation therapy"[All Fields] OR "relaxation therapies"[All Fields] OR "abdominal breathing"[All Fields] OR "deep breathing"[All Fields] OR "progressive" muscle relaxation" [All Fields] OR "imagery" [All Fields] OR "imagery (psychotherapy)" [MeSH Terms] OR "imagery training" [All Fields] OR "special place imagery" [All Fields] OR "guided imagery" [All Fields] OR "autogenic training" [MeSH Terms] OR "autogenic training" [All Fields] OR "desensitization relaxation" [All Fields] OR "paradoxical intention" [All Fields] OR "sleep hygiene" [MeSH Terms] OR "sleep hygiene" [All Fields] OR "sleep restriction" [All Fields] OR "stimulus control"[All Fields]) AND English[lang] AND ("aged" [MeSH Terms] OR "elderly" [All Fields] OR "veterans" [MeSH Terms] OR "military family"[MeSH Terms] OR "active duty"[All Fields] OR "military personnel"[MeSH Terms] OR "sleep beliefs"[All Fields] OR "sleep anxiety"[All Fields] OR "self efficacy" [MeSH Terms] OR "self efficacy" [All Fields] OR "self-efficacy" [All Fields] OR "self concept" [MeSH Terms] OR "self concept" [All Fields] OR "self-concept" [All Fields] OR "performance anxiety" [MeSH Terms] OR "performance anxiety" [All Fields] OR "Comorbidity" [MeSH Terms] OR "comorbidities" [All Fields]) AND ("1900/01/01" [PDAT]: "2020/02/13" [PDAT]) NOT "Editorial" [Publication Type] NOT "Letter" [Publication Type] NOT "Comment"[Publication Type] NOT "Case Reports"[Publication Type] NOT "Biography"[Publication Type] NOT "Review"[Publication Type]

PICO 1 Psychlnfo Search String

SU.EXACT("Insomnia") AND (SU.EXACT("Behavior Therapy") OR SU.EXACT("Psychotherapy") OR SU.EXACT("Biofeedback") OR body monitoring OR bbti OR behavioral treatment OR SU.EXACT("Cognitive Therapy") OR SU.EXACT("Cognitive Behavior Therapy") OR cognitive behavior therapies OR cognitive behavioral therapy for insomnia OR cbt-I OR cbt-Insomnia OR sleep retraining OR SU.EXACT("Mindfulness") OR multicomponent behavioral therapy OR relaxation therapy OR relaxation therapies OR abdominal breathing OR deep breathing OR progressive muscle relaxation OR imagery OR imagery training OR special place imagery OR guided imagery OR autogenic training OR desensitization relaxation OR paradoxical intention OR sleep hygiene OR sleep restriction OR SU.EXACT("Stimulus Control")) AND (elderly OR SU.EXACT("Military Veterans") OR SU.EXACT("Military Duty Status") OR sleep beliefs OR sleep anxiety OR SU.EXACT("Self-Efficacy") OR self-concept OR SU.EXACT("Performance Anxiety") OR SU.EXACT("Comorbidity") OR comorbidities)

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Supplemental material 1

PICO 2 Psychlnfo Search String

SU.EXACT("Insomnia") AND (SU.EXACT("Behavior Therapy") OR SU.EXACT("Psychotherapy") OR SU.EXACT("Biofeedback") OR body monitoring OR bbti OR behavioral treatment OR SU.EXACT("Cognitive Therapy") OR SU.EXACT("Cognitive Behavior Therapy") OR cognitive behavior therapies OR cognitive behavioral therapy for insomnia OR cbt-I OR cbt-Insomnia OR sleep retraining OR SU.EXACT("Mindfulness") OR multicomponent behavioral therapy OR relaxation therapy OR relaxation therapies OR abdominal breathing OR deep breathing OR progressive muscle relaxation OR imagery OR imagery training OR special place imagery OR guided imagery OR autogenic training OR desensitization relaxation OR paradoxical intention OR sleep hygiene OR sleep restriction OR SU.EXACT("Stimulus Control")) AND (SU.EXACT("Group Psychotherapy") OR in-person OR self-help groups OR group SU.EXACT("Computer Assisted Instruction") OR computer-based OR SU.EXACT("Internet") OR internet-delivered OR internet-based OR mobile applications OR mobile applications OR mobile app OR telecommunications OR telephone OR telephone-based OR SU.EXACT("Telemedicine") OR SU.EXACT("Social Networks") OR SU.EXACT("Online Social Networks") OR social community OR online communities OR videoconferencing OR SU.EXACT("Bibliotherapy") OR bibliotherapies OR SU.EXACT("Self-Help Techniques") OR community-based)

Exclusion Criteria: Exclusion criteria are applied during the abstract review of all retrieved publications. Studies that meet <u>any</u> of the exclusion criteria are rejected from the systematic review.

A. Publication type

- 1. Conference abstracts
- 2. Editorials
- 3. Review
- 4. Methods

B. Study type

- Animal research
- 2. Case reports
- 3. Case series
- C. Language non-English
- D. Sample size < 20
- E. Diagnosis NOT insomnia
- F. Patient population < 18 years of age
- G. Main study objective is NOT evaluating the efficacy/effectiveness of psychological and behavioral therapies for insomnia

H. Does NOT include one of the following interventions of interest:

- 1. Biofeedback
- 2. Behavioral treatment for insomnia
- 3. Cognitive behavioral therapy for insomnia
- 4. Intensive sleep retraining
- Mindfulness
- 6. Multicomponent behavioral therapy for insomnia
- 7. Relaxation therapy
- 8. Paradoxical intention treatment
- 9. Sleep hygiene
- Sleep restriction
- 11. Stimulus control

Inclusion Criteria: Inclusion criteria are applied during the full publication review of all publications that were not rejected during the abstract review. Studies that meet <u>all</u> inclusion criteria will be accepted as evidence to use in the systematic review.

A. Intervention and control condition comparisons

| An | y of the following behavioral and psychological interventions | Com | pared to any of the following control conditions (must | | | | |
|-----|--|-------------------|--|--|--|--|--|
| (mi | ust meet at least 1): | meet at least 1): | | | | | |
| 1. | Biofeedback | 1. | Attention control | | | | |
| 2. | Cognitive behavioral therapy-insomnia | 2. | Pharmacologic –placebo drug | | | | |
| | (i.e., Cognitive therapy, Sleep restriction, and Stimulus control) | 3. | Quasi-desensitization | | | | |
| 3. | Intensive sleep retraining | 4. | Sleep hygiene or sleep education | | | | |
| 4. | Mindfulness | 5. | Usual care | | | | |
| 5. | Multicomponent behavioral therapy for insomnia | 6. | Wait-list | | | | |

- 6. Relaxation therapy (i.e., Abdominal breathing, Imagery training, Autogenic training)
- 7. Paradoxical intention treatment
- 8. Sleep hygiene
- 9. Sleep restriction
- 10. Stimulus control

B. Intervention delivery method (must meet at least 1)

- 1. In-person one-on-one visit with a trained CBT-I specialist
- 2. In-person one-on-one visit with provider who is not a trained behavioral and psychological specialist
- 3. Group behavioral and psychological
- 4. Telephone
- 5. Self-help book
- 6. Internet-delivered
- 7. Community-based workshop
- 8. Telemedicine (videoconferencing, etc.)

C. Outcomes of interest (must meet at least 1)

- 1. Beliefs and attitudes about sleep (important)
- 2. Daytime fatigue domain (important)
- 3. Insomnia severity (important)
- 4. Nights with hypnotic use (important)
- 5. Number of nighttime awakenings (important)
- 6. Quality of sleep (critical)
- 7. Remission rate (critical)
- 8. Responder rate (critical)
- 9. Sleep efficiency (important)
- 10. Sleep latency (critical)
- 11. Total wake time (critical)
- 12. Total sleep time (important)
- 13. Wake after sleep onset (critical)

D. Insomnia diagnosis (must meet at least 1)

- 1. Use of any of the 3 diagnostic systems, regardless of version: DSM, ICSD, RDC
- 2. Use of validated sleep instruments in combination with quantitative objective/subjective measure and insomnia complaints (e.g. PSQI and actigraphy or diary-assessed SOL>30 minutes for >=3 nights a week)
- 3. Other sleep complaints/criteria/symptoms that would require adjudication



Supplemental material

May 12, 2020

Abbreviations:

AASM- American Academy of Sleep Medicine

BBTs- Brief Behavioral Therapies

CBT-I- Cognitive Behavioral Therapy for Insomnia

CPG- Clinical practice guideline
DBAS- Dysfunctional Beliefs and Attitudes about Sleep scale

FFS-Flinders Fatigue Scale

FSI- Fatigue symptom index

FSS- Fatigue severity scale

GRADE- Grading of Recommendations Assessment, Development, and Evaluation

IQR- Interquartile range

ISI- Insomnia Severity Index

ISQ- Insomnia Severity Questionnaire

ISR- Intensive Sleep Retraining

MFI- Multidimensional Fatigue Inventory

PI: Paradoxical Intention

PICO – Patient, intervention, comparator, outcome POMS-F- Profile of Mood States Fatigue subscale

PSG- Polysomnography

PSQI – Pittsburgh sleep quality index

RCT- Randomized controlled trial

SD- Standard deviation

SE- Standard error

SMD- Standardized mean-difference

SR- Systematic review

RT- Relaxation therapy

TF- Task force

WASO- Wake after sleep onset



Cognitive Behavioral Therapy (CBT-I)

CBT-I vs. Control

Quality of sleep

Figure S1. Diary-determined quality of sleep, post treatment differences, CBT-I vs. control

| - | (| CBT-I | | С | ontrol | | | Std. Mean Difference | Std. Mean Difference |
|---|-------------|------------|-------|-------|--------|-------|--------|----------------------|----------------------|
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| 2.1.1 In-person, one-on-one delivery | | | | | | | | | |
| Currie 2004 (in-person) | 6.9 | 1.7 | 16 | 4.8 | 1.8 | 17 | 3.2% | 1.17 [0.42, 1.92] | |
| Drake 2019 | 3.63 | 0.66 | 50 | 3.12 | 0.64 | 50 | 5.4% | 0.78 [0.37, 1.19] | |
| Jansson-Frojmark 2012 (J Clin Psycho Med Settings) | 6.5 | 1.5 | 15 | 5.1 | 1.5 | 15 | 3.1% | 0.91 [0.15, 1.67] | |
| Lancee 2016 (in-person) | 3.5 | 0.6 | 26 | 2.9 | 0.5 | 23 | 4.0% | 1.06 [0.46, 1.67] | |
| Faylor 2014 | 7.55 | 1.17 | 16 | 5.81 | 1.1 | 13 | 2.7% | 1.48 [0.64, 2.32] | |
| Taylor 2017 Taylor 2017(in-person) | 2.3 | 0.57 | 33 | 1.7 | 0.57 | 33 | 4.6% | 1.04 [0.52, 1.56] | |
| Subtotal (95% CI) | 2.5 | 0.51 | 156 | 1.1 | 0.57 | 151 | 22.9% | 0.99 [0.75, 1.23] | • |
| Heterogeneity: Tau² = 0.00; Chi² = 2.73, df = 5 (P = 0.74) | · 12 — 1196 | | | | | | ZZIO / | 0.00 [0.10] 1.20] | |
| Fest for overall effect: Z = 8.12 (P < 0.00001) | ,1 - 070 | | | | | | | | |
| 2.1.2 Group delivery | | | | | | | | | |
| Epstein 2007 | 2.8 | 0.6 | 34 | 3.1 | 0.5 | 38 | 4.9% | -0.54 [-1.01, -0.07] | |
| Sandlund 2017 | 3.26 | 0.7 | 82 | 3.01 | 0.7 | 71 | 6.1% | 0.36 [0.04, 0.68] | |
| Subtotal (95% CI) | | | 116 | | | 109 | 11.0% | -0.07 [-0.95, 0.80] | |
| Heterogeneity: Tau ² = 0.36; Chi ² = 9.48, df = 1 (P = 0.002 | 2); I² = 89 | % | | | | | | | |
| Test for overall effect: Z = 0.17 (P = 0.87) | | | | | | | | | |
| 2.1.3 Internet delivery | | | | | | | | | |
| Espie 2012 (Imagery relief) | 56.3 | 19.43 | 55 | 48.04 | 15.43 | 109 | 6.0% | 0.49 [0.16, 0.82] | |
| Ho 2014 | 2.5 | 0.56 | 207 | 2.3 | 0.61 | 105 | 6.7% | 0.35 [0.11, 0.58] | |
| Horsch 2017 | 3.38 | 0.51 | 30 | 2.93 | 0.52 | 48 | 4.8% | 0.86 [0.39, 1.34] | |
| ancee 2015 | 3.14 | 0.52 | 36 | 2.79 | 0.51 | 27 | 4.6% | 0.67 [0.16, 1.18] | |
| _ancee 2016 (internet) | 3.2 | 0.6 | 21 | 2.9 | 0.5 | 23 | 4.0% | 0.54 [-0.07, 1.14] | |
| Strom 2004 | 3.14 | 0.56 | 30 | 3.03 | 0.73 | 51 | 5.0% | 0.16 [-0.29, 0.61] | |
| Faylor 2017 (internet) | 1.9 | 0.58 | 34 | 1.7 | 0.57 | 33 | 4.8% | 0.34 [-0.14, 0.83] | |
| /incent 2009 | 2.18 | 1 | 59 | 1.77 | 1.08 | 59 | 5.7% | 0.39 [0.03, 0.76] | |
| Subtotal (95% CI) | | | 472 | | | 455 | 41.6% | 0.43 [0.30, 0.57] | • |
| Heterogeneity: Tau* = 0.00; Chi* = 6.25, df = 7 (P = 0.51) Test for overall effect: Z = 6.28 (P < 0.00001) | ; I² = 0% | | | | | | | | |
| 2.1.4 Telephone delivery | | | | | | | | | |
| Arnedt 2013 | 3.7 | 0.5 | 15 | 3.6 | 0.5 | 15 | 3.3% | 0.19 [-0.52, 0.91] | |
| Subtotal (95% CI) | | | 15 | | | 15 | 3.3% | 0.19 [-0.52, 0.91] | |
| Heterogeneity: Not applicable | | | | | | | | | |
| Test for overall effect: Z = 0.53 (P = 0.60) | | | | | | | | | |
| 2.1.5 Self-help delivery | | | | | | | | | |
| Currie 2004 (self-help) | 5.7 | 1.8 | 15 | 4.8 | 1.8 | 17 | 3.4% | 0.49 [-0.22, 1.19] | + |
| Jernelov 2012 | 3.1 | 0.57 | 38 | 3 | 0.66 | 36 | 5.0% | 0.16 [-0.30, 0.62] | |
| Morin 2005 | 3.48 | 0.66 | 80 | 3.46 | 0.67 | 87 | 6.2% | 0.03 [-0.27, 0.33] | + |
| /an Straten 2009 | 6.1 | 1.1 | 126 | 6.1 | 1 | 121 | 6.6% | 0.00 [-0.25, 0.25] | + |
| Subtotal (95% CI) | | | 259 | | | 261 | 21.2% | 0.06 [-0.11, 0.23] | * |
| Heterogeneity: Tau² = 0.00; Chi² = 1.85, df = 3 (P = 0.60) Fest for overall effect: Z = 0.70 (P = 0.48) | ; I² = 0% | | | | | | | | |
| Fotal (95% CI) | | | 1018 | | | 991 | 100.0% | 0.46 [0.29, 0.63] | • |
| Heterogeneity: $Tau^2 = 0.10$; $Chi^2 = 64.35$, $df = 20$ (P < 0.0 | 00001): P | = 69% | | | | | | - | <u> </u> |
| Fest for overall effect: Z = 5.19 (P < 0.00001) | | | | | | | | | -2 -1 0 1 2 |
| Test for subgroup differences: Chi² = 39.89, df = 4 (P < 0 | 000011 | $I^2 = 90$ | n% | | | | | | Control CBT-I |

^{*}Currie 2004 (in-person and self) use same control data

Quality of sleep: Insomnia and no comorbidities

Table S1. Diary-determined quality of sleep, post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Std. Mean Difference, | |
|-------------|--------------------------------------|------|-------|-------|------|---------|-----------------------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Taylor 2014 | In-person, one-on-one delivery | 7.55 | 1.7 | 16 | 5.81 | 1.1 | 13 | 1.48[0.64, 2.32] |
| Strom 2014 | Internet delivery | 3.14 | 0.56 | 30 | 3.03 | 0.73 | 51 | 0.16 [-0.29, 0.61] |

Espie 2012 (imagery and usual care pooled control data)

Lancee 2016 (in-person and internet) use same control data

Taylor 2017 (in-person and internet) use same control data

Ho 2014 (pooled results for self-help with and without tel. support, SE converted to SD, diary scores flipped as lower scores indicate improvement)

Quality of sleep: Insomnia and comorbid psychiatric conditions **Table S2.** Diary-determined quality of sleep, post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Std. Mean Difference, | |
|-------------|---|------|-------|-------|------|---------|-----------------------|-------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Currie 2004 | In-person, one-on-one and self-help (pooled) | 6.32 | 1.75 | 31 | 4.8 | 1.8 | 17 | 0.85[0.23, 1.46] |

Quality of sleep: Insomnia and comorbid medical conditions

Table S3. Diary-determined quality of sleep, post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Std. Mean Difference, | |
|------------------------------|--------------------------|------|-------|-------|------|---------|-----------------------|----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Epstein 2007 | In-person, one-on-one | 2.8 | 0.6 | 34 | 3.1 | 0.5 | 38 | -0.54[-1.01, -0.07] |
| Jansson- Frojmark 2007 | In-person, one-on-one | 6.5 | 1.5 | 15 | 5.1 | 1.5 | 15 | 0.91[0.15,1.67] |

Quality of sleep: PSQI

Figure S2. PSQI-determined quality of sleep, post treatment differences, CBT-I vs. control

| Mean 5.27 | CBTI SD | Total | | ontrol SD | Total | | Std. Mean Difference | Std. Mean Difference |
|---------------|---|---|-------------------------------------|---|---|---|--|--|
| | SD | rotai | wean | SU | | | | IV Dender OFW CI |
| 6.27 | | | | | rotui | vveignt | IV, Random, 95% CI | IV, Random, 95% CI |
| | | | 7.05 | 0.50 | | 5.70 | 0.0014.05.0071 | |
| | 3.6 | 54 | 7.65 | | 53 | 5.7% | -0.66 [-1.05, -0.27] | |
| 6.7 | 3.4 | 16 | 11.1 | 4.2 | 17 | 2.2% | -1.12 [-1.86, -0.38] | |
| 5.7 | 4 | 16 | | 3.82 | 18 | 2.5% | -0.55 [-1.24, 0.14] | |
| 5.74 | 3.74 | 30 | 8.64 | 3.32 | 28 | 3.7% | -0.81 [-1.34, -0.27] | |
| | | | | | | | | |
| | | | | | | | | |
| 1.83 | 0.9 | | 2.71 | 0.5 | | | -1.08 [-1.89, -0.27] | |
| 2.000 . 17 | 0.07 | 234 | | | 208 | 24.7% | -0.79 [-1.01, -0.58] | • |
| J.30), I = 1 | 970 | | | | | | | |
| | | | | | | | | |
| 5.71 | 3.74 | 52 | 7.65 | 3.56 | 53 | 5.7% | -0.53 [-0.92, -0.14] | |
| 8.8 | 3.5 | 31 | 12.7 | 3.4 | 26 | 3.5% | -1.11 [-1.68, -0.55] | |
| | | 95 | | | 83 | 7.7% | -0.37 [-0.67, -0.07] | |
| 11.33 | 4.03 | | | | 27 | 3.8% | | |
| | | 16 | | | 15 | | | |
| | | | | | | | | |
| | | | | | | | | |
| 0.0 | 0.0 | 280 | 0.0 | 0.0 | 259 | 29.8% | -0.58 [-0.75, -0.40] | • |
| 0.40); l² = - | 4% | | | | | | | |
| | | | | | | | | |
| 40.0 | 2.0 | | 44.0 | 2.5 | | 0.500 | 0.001.005.005 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 5.38 | 3.17 | | 6.62 | 3.13 | | | | _ |
| 200-17- | 2.400 | 332 | | | 330 | 30.6% | -0.50 [-0.70, -0.30] | ~ |
| J.20), r= . | 3470 | | | | | | | |
| | | | | | | | | |
| 7.6 | 3.1 | 46 | 9.84 | 2.96 | 63 | 5.7% | -0.74 [-1.13, -0.34] | |
| 8.9 | 2.6 | | 11.6 | | | | | |
| | | 95 | | | 116 | 11.0% | -0.89 [-1.19, -0.58] | • |
| 0.28); l² = 1 | 14% | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 4.6 | 2.9 | | 5.9 | 3.7 | | | | |
| | | 15 | | | 15 | 2.3% | -0.38 [-1.10, 0.34] | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 6.8 | 2.4 | 12 | 10.7 | 2.8 | 13 | 1.6% | -1.44 [-2.34, -0.54] | |
| | | 12 | | | 13 | 1.6% | -1.44 [-2.34, -0.54] | |
| | | | | | | | | |
| | | | | | | | | |
| | | 968 | | | 941 | 100.0% | -0.66 [-0.78, -0.54] | • |
| = 0.07): 12 | = 32% | 5 | | | | | | |
| 2.21/11 | 22, | - | | | | | | -2 -1 0 1 2 |
| P = 0.07\ | 2 ± 51 | 8% | | | | | | Favors CBTI Favors Control |
| | 1.83 0.36); F = 1 8.8 9.84 11.33 11.55 8.3 6.8 0.40); F = 1 8.05 8.23 5.38 0.20); F = 1 4.6 6.8 | 3.31 2.47 1.83 0.9 0.36); F = 9% 5.71 3.74 8.8 3.5 9.84 4.17 11.33 4.03 11.55 4.29 8.3 3.3 6.8 3.9 0.40); F = 4% 10.8 3.8 9.1 4.2 8.05 4.35 8.23 3.9 5.38 3.17 0.20); F = 34% 4.6 2.9 6.8 2.4 | 3.31 2.47 16 1.83 0.9 20 234 0.36); | 3.31 2.47 16 7.62 1.83 0.9 20 2.71 2.34 3.36); | 3.31 2.47 16 7.62 2.57 1.83 0.9 20 2.71 0.5 234 3.36); | 3.31 2.47 16 7.62 2.57 13 1.83 0.9 20 2.71 0.5 10 234 208 2.34 208 2.34 208 2.34 208 2.34 208 2.34 2.34 2.34 2.34 2.34 2.34 2.34 2.34 | 3.31 2.47 16 7.62 2.57 13 1.7% 1.83 0.9 20 2.71 0.5 10 1.9% 208 24.7% 208 20.40% 208 20.40% 208 20.40% 208 20.40% 208 20.40% 20.4 | 3.31 2.47 16 7.62 2.57 13 1.7% -1.67 [-2.53], -0.80] 1.83 0.9 20 2.71 0.5 10 1.9% -1.08 [-1.89], -0.27] 234 208 24.7% -0.79 [-1.01], -0.58] 0.36); P = 9% 0.37 1.374 52 7.65 3.56 53 5.7% -0.53 [-0.92], -0.14] 8.8 3.5 31 12.7 3.4 26 3.5% -1.11 [-1.68], -0.56] 9.84 4.17 95 11.3 3.68 83 7.7% -0.37 [-0.67], -0.07] 11.33 4.03 30 13.48 2.88 27 3.8% -0.60 [-1.13], -0.07] 11.55 4.29 16 13.2 3.12 15 2.4% -0.43 [-1.14], 0.29] 8.3 3.3 11 10.7 2.8 13 1.8% -0.76 [-1.60], 0.07] 11.55 4.29 16 13.2 3.12 15 2.4% -0.43 [-1.14], 0.29] 8.3 3.3 11 10.7 2.8 13 1.8% -0.76 [-1.60], 0.07] 1.59 4.29 16 13.2 3.12 15 2.4% -0.46 [-1.17], 0.07] 1.00); P = 4% 0.38 |

^{*}Currie 2004 (in-person and self) use same control *Morin 2005 SD calculated from 95%Cl

Quality of sleep (PSQI): Insomnia and no comorbidities

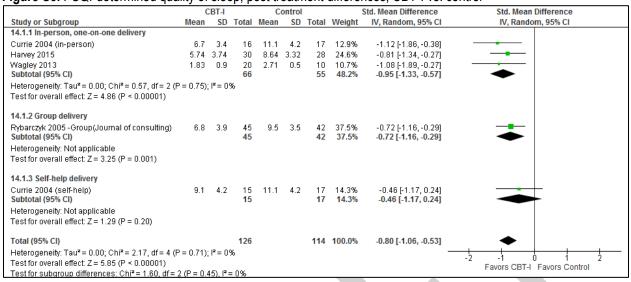
Table \$4. PSQI-determined quality of sleep, post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Std. Mean Difference, | |
|-----------------|--------------------------|------|-------|-------|------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Edinger 2009 | In-person, one-on-one | 5.7 | 4 | 16 | 7.9 | 3.82 | 18 | -0.55[-1.24, 0.14] |
| Taylor 2014 | In-person, one-on-one | 3.31 | 2.47 | 16 | 7.62 | 2.57 | 13 | -1.67[-2.53, -0.80] |

^{*}Alessi 2016 (in-person and group) use same control, SE converted to SD

Quality of sleep (PSQI): Insomnia and comorbid psychiatric conditions

Figure S3. PSQI-determined quality of sleep, post treatment differences, CBT-I vs. control



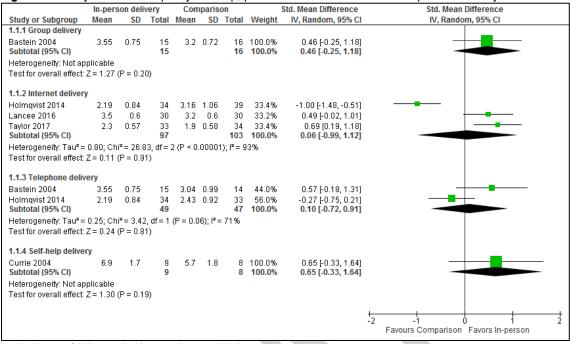
Quality of sleep (PSQI): Insomnia and comorbid medical conditions

Figure S4. PSQI-determined quality of sleep, post treatment differences, CBT-I vs. control

| <u> </u> | | | | , | | | | | |
|---|----------|----------|------------------|--------|-----------------------------|------------------|-----------------------|---|-------------------------------|
| • | (| CBT-I | | С | ontrol | _ | | Std. Mean Difference | Std. Mean Difference |
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| 13.1.2 Group delivery | | | | | | | | | |
| Currie 2000 | 8.8 | 3.5 | 31 | 12.7 | 3.4 | 26 | 20.4% | -1.11 [-1.68, -0.55] | |
| Hou 2014 | 2 | 0.5 | 51 | 2.6 | 0.6 | 47 | 34.4% | -1.08 [-1.51, -0.66] | |
| Martinez 2014 | 11.33 | 4.03 | 30 | 13.48 | 2.88 | 27 | 22.7% | -0.60 [-1.13, -0.07] | |
| Miro 2011 | 11.55 | 4.29 | 16 | 13.2 | 3.12 | 15 | 13.0% | -0.43 [-1.14, 0.29] | |
| Rybarczyk 2002 Subtotal (95% CI) | 8.3 | 3.3 | 11 139 | 10.7 | 2.8 | 13 128 | 9.5% 100.0% | -0.76 [-1.60, 0.07] - 0.86 [-1.13, -0.60] | • |
| Heterogeneity: Tau² = Test for overall effect: | | | | | 0.38); | I²= 5% | | | |
| Total (95% CI) | | | 139 | | | 128 | 100.0% | -0.86 [-1.13, -0.60] | • |
| Heterogeneity: Tau ² = | 0.00; CI | hi² = 4. | 21, df= | 4 (P = | - | | | | |
| Test for overall effect: | Z = 6.48 | (P < 0 | .00001 | | Favors CBT-I Favors Control | | | | |
| Test for subgroup differences: Not applicable | | | | | | | | | 1 avois ODI-1 Favois Collifol |

Quality of sleep (Diary): In-person delivery vs. comparison:

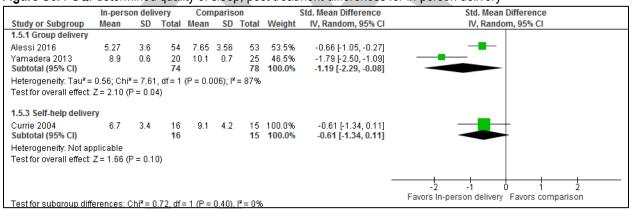
Figure S5. Diary-determined quality of sleep, post treatment differences for in-person delivery



^{*} each subgroup of delivery method is reported separately in the results section

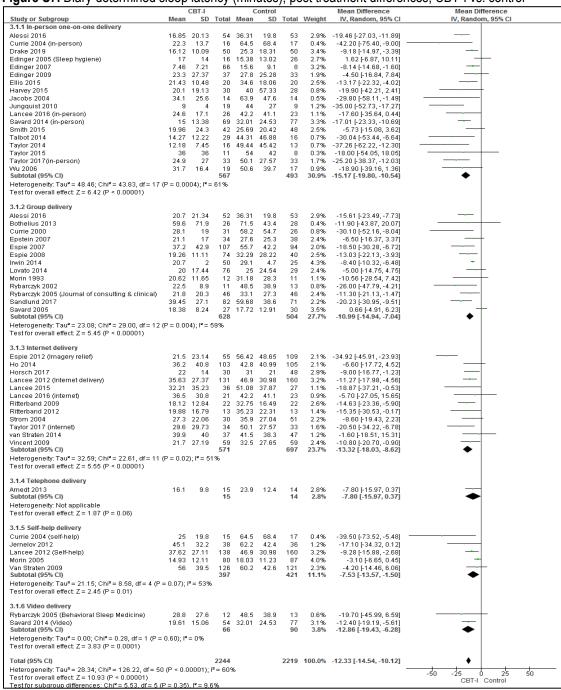
Quality of sleep (PSQI): In-person delivery vs. comparison:

Figure S6. PSQI-determined quality of sleep, post treatment differences for in-person delivery



Sleep latency (Diary)

Figure S7. Diary-determined sleep latency (minutes), post treatment differences, CBT-I vs. control



Currie 2004 (in-person and self) uses same control data

Espie 2012 (imagery and usual care control data pooled)

Lancee 2016 (in-person and internet) uses same control data

Edinger 2005 (usual care and sleep hygiene control data pooled)

Savard 2014 (in-person and video) uses same control data

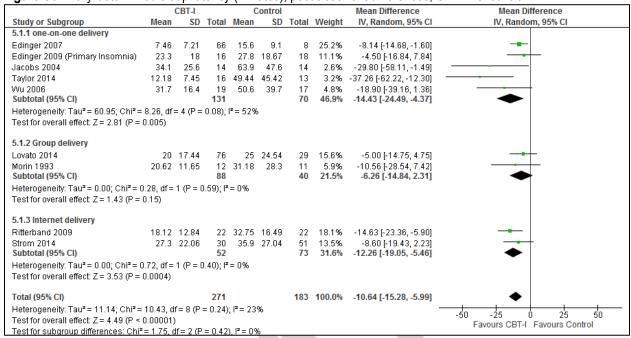
Lancee 2012 (internet and self-help) uses same control data

Taylor 2017 (in-person and internet) uses same control data

Alessi 2016 (in-person and group) uses same control data, SE converted to SD

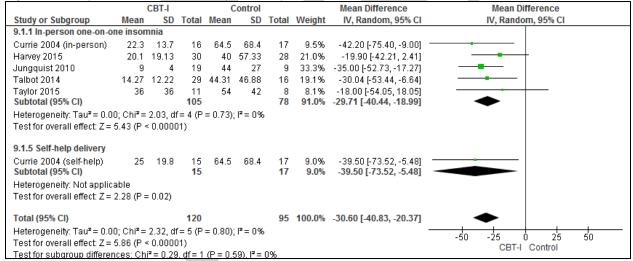
Sleep latency (Diary): Insomnia and no comorbidities

Figure S8. Diary-determined sleep latency (minutes), post treatment differences, CBT-I vs. control



Sleep latency (Diary): Insomnia and comorbid psychiatric conditions

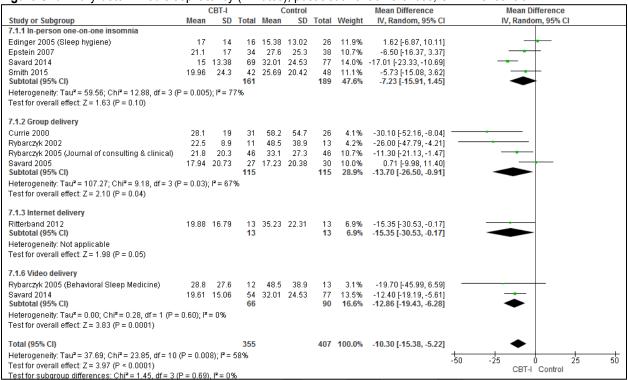
Figure S9. Diary-determined sleep latency (minutes), post treatment differences, CBT-I vs. control



^{*}Currie 2004 (in-person and self) uses same control data

Sleep latency (Diary): Comorbid medical conditions

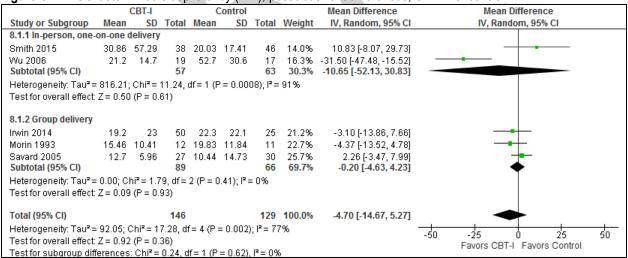
Figure S10. Diary-determined sleep latency (minutes), post treatment differences, CBT-I vs. control



^{*}Edinger 2005 (usual care and sleep hygiene control data pooled)

Sleep latency (PSG)

Figure S11. PSG-determined sleep latency (min), post treatment differences, CBT-I vs. control



^{*}Savard 2014 (in-person and video) uses same control data

Sleep latency (PSG): Insomnia and no comorbidities

Table S5. PSG-determined sleep latency, post treatment differences. CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Mean Difference, [95% CI] | |
|------------|--------------------------|-------|-------|-------|-------|---------|---------------------------|-------------------------|
| • | method | Mean | SD | Total | Mean | SD | Total | |
| Wu 2006 | In-person, one-on-one | 21.2 | 14.7 | 19 | 52.7 | 30.6 | 17 | -31.50[-47.48, -15.52] |
| Morin 1993 | Group delivery | 15.46 | 10.41 | 12 | 19.83 | 11.84 | 11 | -4.37[-13.52, 4.78] |

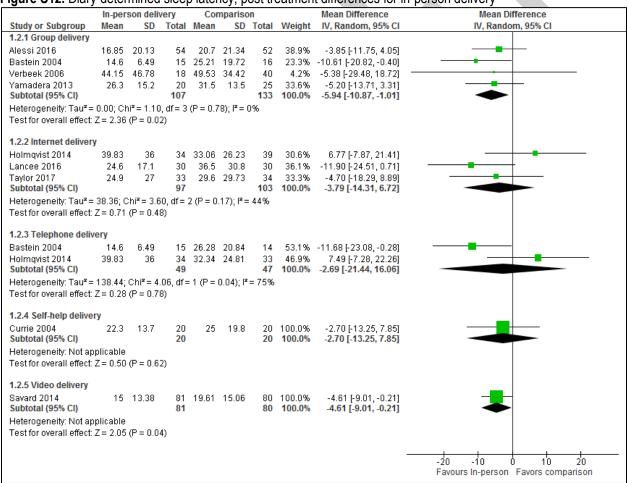
Sleep latency (PSG): Insomnia and comorbid medical conditions

Table S6. PSG-determined sleep latency, post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|---------------|--------------------------|-------|-------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Smith 2015 | In-person, one-on-one | 30.86 | 57.29 | 38 | 20.03 | 17.41 | 46 | 10.83 [-8.07, 29.73] |
| Savard 2005 | Group delivery | 12.7 | 5.96 | 12 | 10.44 | 14.73 | 30 | 2.26 [-4.00, 8.52] |

Sleep latency: In-person delivery vs. comparison:

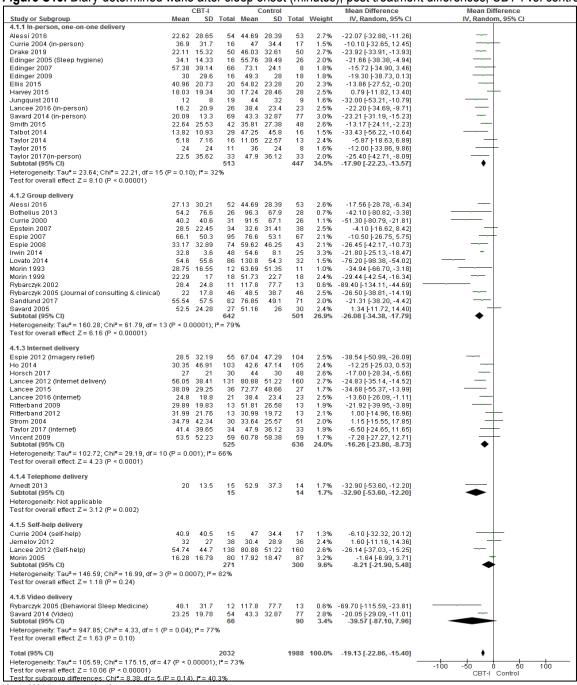
Figure S12. Diary-determined sleep latency, post treatment differences for in-person delivery



 $[\]ensuremath{^{\star}}$ each subgroup of delivery method is reported separately in the results section

Wake after sleep onset

Figure S13. Diary-determined wake after sleep onset (minutes), post treatment differences, CBT-I vs. control



*Currie 2004 (in-person and self) uses same control data

Espie 2012 imagery and usual care control groups pooled data

Lancee 2016 (in-person and internet) uses same control data

Edinger 2005 usual care and sleep hygiene pooled control data

Savard 2014 (in-person and video) uses same control data

Lancee 2012 (internet and self-help) uses same control data

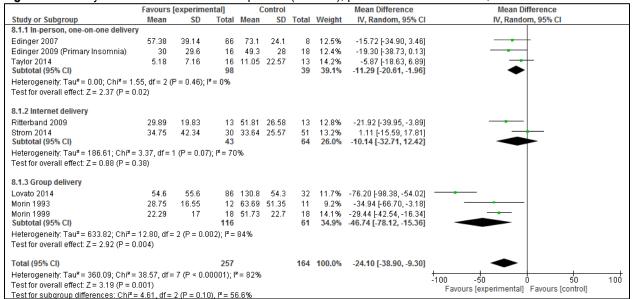
Taylor 2017 (in-person and internet) uses same control data

Alessi 2016 (in-person and group) uses same control data, SE converted SD

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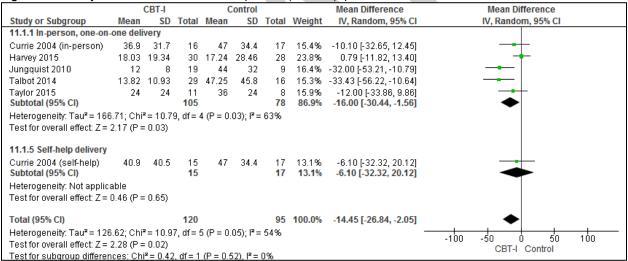
Wake after sleep onset (Diary): Insomnia and no comorbidities

Figure S14. Diary-determined wake after sleep onset (minutes), post treatment differences, CBT-I vs. control



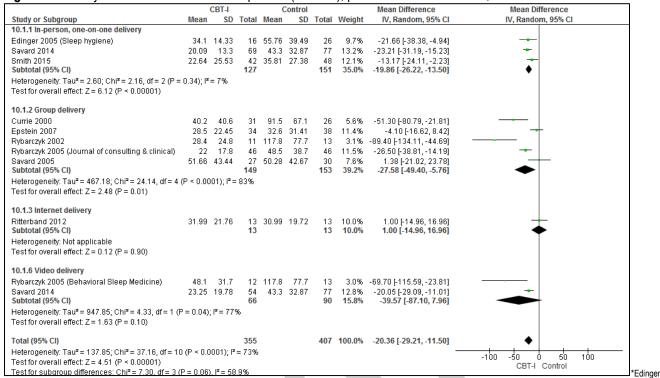
Wake after sleep onset (Diary): Insomnia and comorbid psychiatric conditions

Figure S15. Diary-determined wake after sleep onset (minutes), post treatment differences, CBT-I vs. control



Wake after sleep onset: Insomnia and comorbid medical conditions

Figure S16. Diary-determined wake after sleep onset (minutes), post treatment differences, CBT-I vs. control



2005 (in-person and self) pooled control data

Wake after sleep onset (Act)

Figure S17. Actigraphy-determined wake after sleep onset (min), post treatment differences, CBT-I vs. control

| | Favo | urs CBT | • | C | ontrol | | | Mean Difference | Mean Difference |
|--|----------------|-----------|------------------|-------------------------------------|--------|------------------|------------------------|---|---------------------------------|
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| 11.1.1 In-person, one-on-one d | elivery | | | | | | | | |
| Edinger 2005 (Sleep hygiene) | 48.7 | 17.82 | 15 | 63.43 | 26.83 | 23 | 8.2% | -14.73 [-28.93, -0.53] | |
| Edinger 2009 | 59.9 | 28.4 | 16 | 62.5 | 27.5 | 18 | 5.6% | -2.60 [-21.44, 16.24] | |
| Smith 2015 | 90.33 | 58.28 | 38 | 115.87 | 69.68 | 44 | 3.0% | -25.54 [-53.24, 2.16] | |
| Talbot 2014 | 104.88 | 80.29 | 29 | 118.84 | 73 | 16 | 1.2% | -13.96 [-60.15, 32.23] | |
| Taylor 2014 | 40.6 | 10.77 | 16 | 39.8 | 20.9 | 13 | 9.6% | 0.80 [-11.73, 13.33] | |
| Taylor 2017 (in-person) Subtotal (95% CI) | 49.3 | 22.98 | 33 147 | 47 | 20.11 | 33 147 | 11.6% 39.2% | 2.30 [-8.12, 12.72] -4.73 [-12.54, 3.07] | |
| Heterogeneity: Tau2 = 23.29; Ch | ni² = 6.68. i | df = 5 (P | = 0.25 |): I ² = 25 ⁹ | % | | | | |
| Test for overall effect: Z = 1.19 (| | (| | ,,. =- | | | | | |
| 11.1.2 Group delivery | | | | | | | | | |
| Epstein 2007 | 28.3 | 11.8 | 31 | 31.1 | 16.2 | 30 | 15.7% | -2.80 [-9.93, 4.33] | |
| Espie 2007 | 59 | 25.3 | 69 | 53.8 | 23.7 | 57 | 13.8% | 5.20 [-3.37, 13.77] | - |
| Espie 2008 | 52.83 | 22.91 | 74 | 64.85 | 33.86 | 39 | 10.2% | -12.02 [-23.86, -0.18] | |
| Lovato 2014 | 37.8 | 27.8 | 86 | 50.4 | 30.5 | 32 | 10.0% | -12.60 [-24.69, -0.51] | |
| Subtotal (95% CI) | | | 260 | | | 158 | 49.7% | -4.61 [-12.54, 3.33] | ◆ |
| Heterogeneity: Tau ² = 40.55; Ch | | df=3 (P | = 0.04 |); I² = 63° | % | | | | |
| Test for overall effect: Z = 1.14 (| P = 0.26) | | | | | | | | |
| 11.1.3 Internet delivery | | | | | | | | | |
| Taylor 2017 (internet) Subtotal (95% CI) | 54.1 | 25.07 | 34 34 | 47 | 20.11 | 33 33 | 11.2% 11.2 % | 7.10 [-3.77, 17.97] 7.10 [-3.77, 17.97] | |
| Heterogeneity: Not applicable | | | | | | | | | |
| Test for overall effect: $Z = 1.28$ (| P = 0.20) | | | | | | | | |
| Total (95% CI) | | | 441 | | | 338 | 100.0% | -3.34 [-8.46, 1.77] | • |
| Heterogeneity: Tau² = 30.21; Ch | ni² = 18.09 | , df = 10 | (P = 0. | $.05$); $I^2 = 4$ | 45% | | | | -100 -50 0 50 100 |
| Test for overall effect: Z = 1.28 (| P = 0.20) | | | | | | | | Favours CBT-I Favours Control |
| Test for subgroup differences: (| $0hi^2 = 3.57$ | df = 2 | P = 0.1 | $(7), 1^2 = 4$ | 4.0% | | | | . avours out 1 Tavours contitor |

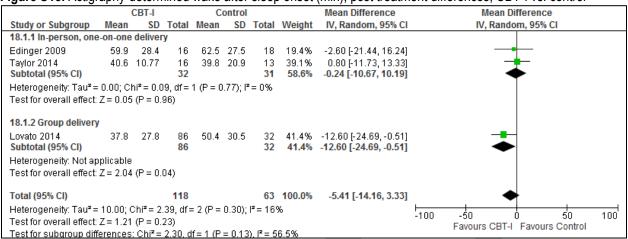
^{*}Edinger 2005 (in-person and self) pooled control data

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Taylor 2017 (in-person and internet) uses same control data, converted SE to SD

Wake after sleep onset (Act): Insomnia and no comorbidities

Figure S18. Actigraphy-determined wake after sleep onset (min), post treatment differences, CBT-I vs. control



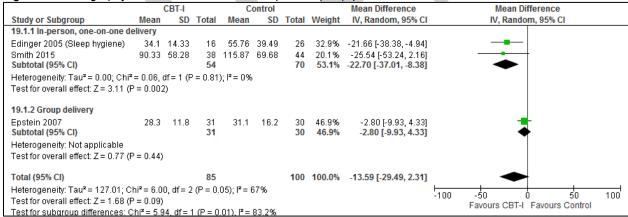
Wake after sleep onset (Act): Insomnia and comorbid psychiatric conditions

Table S7. Actigraphy-determined wake after sleep onset (min), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Mean Difference, [95% CI] | |
|-------------|------------|--------|-------|-------|--------|---------|---------------------------|------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Talbot 2014 | In-person, | 104.88 | 80.29 | 29 | 118.84 | 73 | 16 | -13.96[-60.15, 32.23] |
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Wake after sleep onset (Act): Insomnia and comorbid medical conditions

Figure S19. Actigraphy-determined wake after sleep onset (min), post treatment differences, CBT-I vs. control

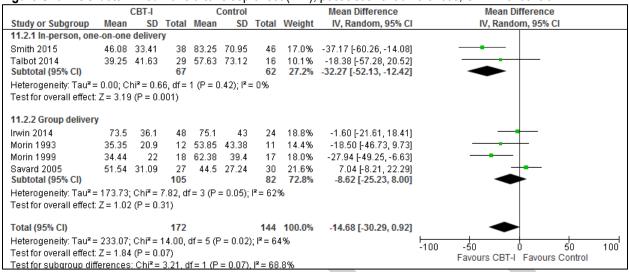


^{*}Edinger 2005 (in-person and self) pooled control data

Supplemental material
May 12, 2020

Wake after sleep onset (PSG)

Figure S20. PSG-determined wake after sleep onset (min), post treatment differences, CBT-I vs. control



Wake after sleep onset (PSG): Insomnia and no comorbidities

Table S8. PSG-determined wake after sleep onset (min), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Mean Difference, [95% CI] | |
|------------|----------------|-------|-------|-------|-------|---------|---------------------------|------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Morin 1993 | Group delivery | 35.59 | 20.9 | 12 | 53.85 | 43.38 | 11 | -18.50[-46.73, 9.73] |
| Morin 1999 | Group delivery | 34.44 | 22 | 18 | 62.38 | 39.4 | 17 | -27.94[-49.25, -6.63] |

Wake after sleep onset (PSG): Insomnia and comorbid psychiatric conditions

Table S9. PSG-determined wake after sleep onset (min), post treatment differences. CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | Mean Difference, [95% CI] | |
|-------------|------------|-------|-------|-------|-------|---------|---------------------------|------------------------|
| • | method | Mean | SD | Total | Mean | SD | Total | |
| Talbot 2014 | In-person, | 39.25 | 41.63 | 29 | 57.63 | 73.12 | 16 | -18.38[-57.28, 20.52] |
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

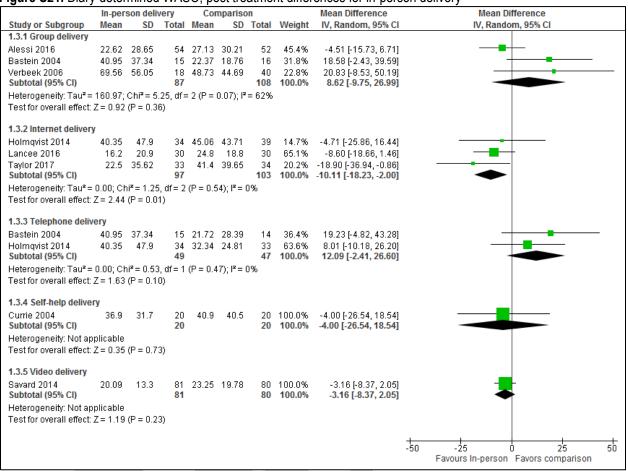
Wake after sleep onset (PSG): Insomnia and comorbid medical conditions

Table S10, PSG-determined wake after sleep onset (min), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|-------------|--------------------------------------|-------|-------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Smith 2015 | In-person, one-on-one delivery | 46.08 | 33.41 | 38 | 83.25 | 70.95 | 46 | -37.17[-60.26, -14.08] |
| Savard 2005 | Group delivery | 51.54 | 31.09 | 27 | 44.5 | 27.24 | 30 | 7.04[-8.21, 22.29] |

WASO (Diary): In-person delivery vs. comparison:

Figure S21. Diary-determined WASO, post treatment differences for in-person delivery



^{*} each subgroup of delivery method is reported separately in the results section

WASO (Act): In-person delivery vs. comparison:

Table S11. Actigraphy-determined WASO, post treatment differences for in-person delivery

| Study | | In-person CB | T-I | Gr | oup delivery C | BT-I | Mean Difference, [95% CI] |
|------------------|------|--------------|-------|------|----------------|-------|---------------------------|
| | Mean | SD | Total | Mean | SD | Total | |
| Yamadera 2013 | 15.8 | 11.18 | 20 | 12.5 | 10.5 | 25 | 3.30[-3.10, 9.70] |

Table S12. Actigraphy-determined WASO, post treatment differences for in-person delivery

| Study | | In-person CB | Г-I | Inte | ernet delivery (| CBT-I | Mean Difference, [95% CI] |
|-------------|------|--------------|-------|------|------------------|-------|---------------------------|
| | Mean | SD | Total | Mean | SD | Total | |
| Taylor 2017 | 49.3 | 22.8 | 33 | 54.1 | 25.07 | 34 | -4.80 [-16.27, 6.67] |

Remission rates

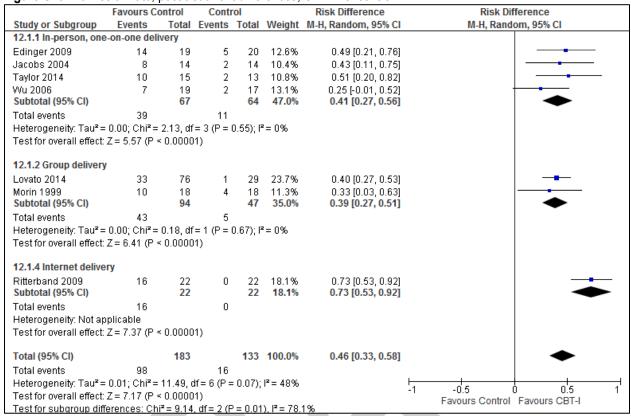
Figure S22. ISI/Diary -determined remission rate, post treatment differences, CBT-I vs. control

| -igure S22. ISI/Diary -determined remi | | | <u> </u> | | nent u | | |
|--|--------------|-------|----------|-------|--------|--|---|
| | CBT- | | Contr | | | Risk Difference | Risk Difference |
| Study or Subgroup | Events | Total | Events | Total | Weight | M-H, Random, 95% CI | M-H, Random, 95% CI |
| 5.1.1 In-person, one-on-one delivery | | | | | | | |
| Currie 2004 (in-person) | 6 | 16 | . 1 | 17 | 2.9% | 0.32 [0.05, 0.58] | |
| Drake 2019 | 41 | 49 | 16 | 48 | 4.4% | 0.50 [0.33, 0.67] | _ |
| Edinger 2009 | 14 | 19 | 5 | 20 | 2.7% | 0.49 [0.21, 0.76] | |
| Harvey 2015 | 15 | 22 | 2 | 19 | 3.2% | 0.58 [0.34, 0.82] | |
| Jacobs 2004 | 8 | 14 | 2 | 14 | 2.2% | 0.43 [0.11, 0.75] | |
| Jansson-Frojmark 2012 (J Clin Psycho Med Settings) | 4 | 17 | 0 | 15 | 3.5% | 0.24 [0.02, 0.45] | |
| Savard 2014 (in-person) | 54 | 70 | 35 | 76 | 4.8% | 0.31 [0.16, 0.46] | |
| Smith 2015 | 32 | 43 | 20 | 48 | 4.0% | 0.33 [0.14, 0.52] | |
| Talbot 2014 | 11 | 27 | 0 | 15 | 3.8% | 0.41 [0.21, 0.61] | |
| Taylor 2014 | 10 | 15 | 2 | 13 | 2.3% | 0.51 [0.20, 0.82] | |
| Wagley 2013 | 2 | 21 | 0 | 10 | 4.2% | 0.10 [-0.09, 0.28] | |
| Wu 2006 | 7 | 19 | 2 | 17 | 2.8% | 0.25 [-0.01, 0.52] | |
| Subtotal (95% CI) | | 332 | | 312 | 40.8% | 0.36 [0.28, 0.44] | - |
| Total events | 204 | | 85 | | | | |
| Heterogeneity: Tau 2 = 0.01; Chi 2 = 19.29, df = 11 (P = 0.0 Test for overall effect: Z = 8.37 (P < 0.00001) | J6); I*= 43 | % | | | | | |
| 5.1.2 Group delivery | | | | | | | |
| Currie 2000 | 13 | 32 | 2 | 28 | 3.9% | 0.33 [0.14, 0.53] | —— |
| Espie 2007 | 32 | 107 | 17 | 94 | 5.5% | 0.12 [0.00, 0.23] | |
| Fleming 2014 | 38 | 73 | 7 | 40 | 4.5% | 0.35 [0.18, 0.51] | |
| Irwin 2014 | 27 | 50 | 5 | 25 | 3.7% | 0.34 [0.13, 0.55] | |
| Lovato 2014 | 33 | 76 | 1 | 29 | 5.2% | 0.40 [0.27, 0.53] | |
| Morin 1999 | 10 | 18 | 4 | 18 | 2.4% | 0.33 [0.03, 0.63] | |
| Sandlund 2017 | 41 | 82 | 18 | 71 | 4.8% | 0.25 [0.10, 0.39] | |
| Savard 2005 | 12 | 23 | 2 | 28 | 3.4% | 0.45 [0.22, 0.68] | |
| Subtotal (95% CI) | | 461 | | 333 | 33.5% | 0.31 [0.22, 0.40] | • |
| Total events | 206 | | 56 | | | | |
| Heterogeneity: Tau 2 = 0.01; Chi 2 = 14.52, df = 7 (P = 0.04) Test for overall effect: Z = 6.85 (P < 0.00001) | 4); I² = 52% | 6 | | | | | |
| 5.1.3 Self-help delivery | | | | | | | |
| Currie 2004 (self-help) | 3 | 15 | 1 | 17 | 3.3% | 0.14 [-0.09, 0.37] | |
| Jernelov 2012 | 11 | 45 | 1 | 44 | 5.2% | 0.22 [0.09, 0.35] | |
| Subtotal (95% CI) | | 60 | ' | 61 | 8.5% | 0.20 [0.09, 0.32] | • |
| Total events | 14 | | 2 | - | | ,, | |
| Heterogeneity: Tau ² = 0.00; Chi ² = 0.35, df = 1 (P = 0.55) Test for overall effect: $Z = 3.43$ (P = 0.0006) | | | - | | | | |
| 5.1.4 Internet delivery | | | | | | | |
| Horsch 2017 | 17 | 45 | 6 | 62 | 4.6% | 0.28 [0.12, 0.44] | |
| Ritterband 2009 | 16 | 22 | 0 | 22 | 3.9% | 0.73 [0.53, 0.92] | |
| Ritterband 2012 | 7 | 14 | 2 | 14 | 2.2% | 0.36 [0.04, 0.68] | |
| Subtotal (95% CI) | | 81 | - | 98 | 10.7% | 0.46 [0.14, 0.77] | |
| Total events | 40 | | 8 | | | | |
| Heterogeneity: Tau 2 = 0.06; Chi 2 = 13.08, df = 2 (P = 0.00) Test for overall effect: Z = 2.85 (P = 0.004) | | % | ŭ | | | | |
| 5.1.5 Video delivery | | | | | | | |
| Savard 2014 (Video) | 38 | 57 | 35 | 76 | 4.5% | 0.21 [0.04, 0.37] | |
| Subtotal (95% CI) | 36 | 57 | 20 | 76 | 4.5% | 0.21 [0.04, 0.37] 0.21 [0.04, 0.37] | |
| Total events | 38 | | 35 | | 210.0 | 5.2. [510·1] 0101] | |
| Heterogeneity: Not applicable | 30 | | 33 | | | | |
| Test for overall effect: Z = 2.43 (P = 0.01) | | | | | | | |
| 5.1.6 Telephone delivery | | | | | | | 1 |
| Arnedt 2013 | 11 | 15 | 6 | 15 | 2.1% | 0.33 [-0.00, 0.67] | |
| Subtotal (95% CI) | | 15 | Ŭ | 15 | 2.1% | 0.33 [-0.00, 0.67] | |
| Total events | 11 | | 6 | | | , | |
| Heterogeneity: Not applicable | | | Ŭ | | | | |
| Test for overall effect: Z = 1.96 (P = 0.05) | | | | | | | |
| | | | | | | | |
| Total (95% CI) | | 1006 | | 895 | 100.0% | 0.33 [0.28, 0.39] | ◆ |
| Total events | 513 | | 192 | | | | 1 |
| Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 58.68$, $df = 26$ (P = 0.0 | 0003); I²= | 56% | | | | _ | 05 025 0 025 05 |
| Test for overall effect: Z = 11.40 (P < 0.00001) | | | | | | | -0.5 -0.25 0 0.25 0.5 Favours Control Favours CBTI |
| Test for subgroup differences: $Chi^2 = 6.95$, $df = 5$ (P = 0. | 22), J² = 28 | 3.1% | | | | | 1 avours Control Favours CD11 |

*Currie 2004 (in-person and self) uses same control data Savard 2014 (in-person and video) uses same control data

Remission rate: Insomnia and no comorbidities

Figure S23. Remission rate, post treatment differences, CBT-I vs. control



Remission rate: Insomnia and comorbid psychiatric conditions

Figure S24. Remission rate, post treatment differences, CBT-I vs. control

| | Favours Cor | itrol | Contr | ol | Risk Difference | Risk Difference | |
|--|---|----------|------------|------------------|------------------------|---|--------------------------------|
| Study or Subgroup | Favours Control Control Perents Total Events Total Events | | | | | M-H, Random, 95% CI | M-H, Random, 95% CI |
| 14.1.1 In-person, one-on-or | dy or Subgroup Events Total Events Total Weight 1.1 In-person, one-on-one delivery rie 2004 (in-person) 6 16 1 17 17.59 rie 2004 (in-person) 6 16 1 17 17.59 rie 2015 15 22 2 19 18.89 bot 2014 11 27 0 15 20.89 gley 2013 2 21 0 10 21.99 ototal (95% CI) 86 61 79.09 al events 34 3 3 12 75% 55 </td <td></td> <td></td> <td></td> | | | | | | |
| Currie 2004 (in-person) | 6 | 16 | 1 | 17 | 17.5% | 0.32 [0.05, 0.58] | |
| Harvey 2015 | 15 | 22 | 2 | 19 | 18.8% | 0.58 [0.34, 0.82] | _ - |
| Talbot 2014 | 11 | 27 | 0 | 15 | 20.8% | 0.41 [0.21, 0.61] | _ |
| Wagley 2013 Subtotal (95% CI) | 2 | | 0 | | 21.9% 79.0% | 0.10 [-0.09, 0.28] 0.34 [0.12, 0.56] | — |
| Total events | 34 | | 3 | | | ,,, | |
| | Chi ² = 12.20 | . df = 3 | (P = 0.00) | 07); I² = | 75% | | |
| | | | | ,, | | | |
| 14.1.3 Self-help delivery | | | | | | | |
| Currie 2004 (self-help) Subtotal (95% CI) | 3 | | 0 | | 21.0% 21.0 % | 0.18 [-0.02, 0.37] 0.18 [-0.02, 0.37] | • |
| Total events | - | | 0 | | | | |
| | | | | | | | |
| Test for overall effect: $Z = 1$. | 75 (P = 0.08) | 1 | | | | | |
| Total (95% CI) | | 103 | | 78 | 100.0% | 0.31 [0.13, 0.48] | • |
| Total events | 37 | | 3 | | | | |
| Heterogeneity: Tau ² = 0.03; | Chi ² = 13.70 | , df = 4 | (P = 0.00 | 08); I² = | 71% | | -1 -0.5 0 0.5 1 |
| Test for overall effect: $Z = 3$. | albot 2014 11 27 0 15 20.8% agley 2013 2 21 0 10 21.9% btotal (95% CI) 86 61 79.0% btal events 34 3 eterogeneity: Tau² = 0.04; Chi² = 12.20, df = 3 (P = 0.007); I² = 75% est for overall effect: Z = 3.05 (P = 0.002) I.1.3 Self-help delivery currie 2004 (self-help) 3 17 0 17 21.0% btal events 3 0 eterogeneity: Not applicable est for overall effect: Z = 1.75 (P = 0.08) otal (95% CI) 103 78 100.0% | | | | | | Favours Control Favours CBT-I |
| Test for subgroup difference | es: Chi² = 1.3 | 21. df= | 1 (P = 0. | 27), l² = | = 17.1% | | 1 avours Control Pavours CD1-1 |

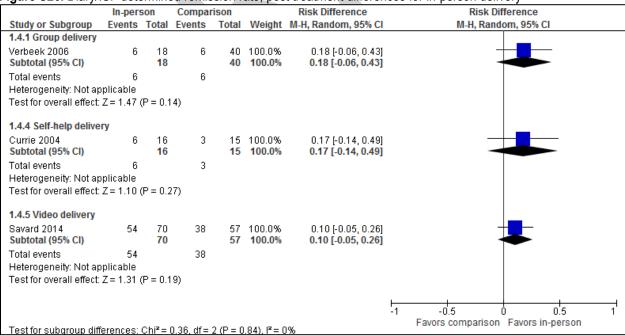
Remission rate: Comorbid medical conditions

Figure S25. Remission rate, post treatment differences, CBT-I vs. control

| | Favours C | ontrol | Contr | ol | | Risk Difference | Risk Difference |
|---|----------------------------|--------|--------|-------|--------|---------------------|--|
| Study or Subgroup | Events | Total | Events | Total | Weight | M-H, Random, 95% CI | M-H, Random, 95% CI |
| 13.1.1 In-person, one-on-one delivery | | | | | | | |
| Jansson-Frojmark 2012 (J Clin Psycho Med Settings) | 4 | 17 | 0 | 15 | 9.8% | 0.24 [0.02, 0.45] | |
| Savard 2014 | 54 | 70 | 35 | 76 | 17.5% | 0.31 [0.16, 0.46] | |
| Smith 2015 | 32 | 43 | 20 | 48 | 12.1% | 0.33 [0.14, 0.52] | - |
| Subtotal (95% CI) | | 130 | | 139 | 39.3% | 0.30 [0.20, 0.40] | • |
| Total events | 90 | | 55 | | | | |
| Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.47$, $df = 2$ (P = 0.79) Test for overall effect: $Z = 5.66$ (P < 0.00001) | 1*= 0% | | | | | | |
| 13.1.2 Group delivery | | | | | | | |
| Currie 2000 | 13 | 32 | 2 | 28 | 11.7% | 0.33 [0.14, 0.53] | _ - |
| Rybarczyk 2005 (Journal of consulting & clinical) | 35 | 46 | 11 | 46 | 13.9% | 0.52 [0.35, 0.70] | _ |
| Savard 2005 | 12 | 23 | 2 | 28 | 9.2% | 0.45 [0.22, 0.68] | |
| Subtotal (95% CI) | | 101 | | 102 | 34.8% | 0.44 [0.33, 0.55] | - |
| Total events | 60 | | 15 | | | | |
| Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.98$, $df = 2$ (P = 0.37) Test for overall effect: $Z = 7.69$ (P < 0.00001) | 17= 0% | | | | | | |
| 13.1.4 Internet delivery | | | | | | | |
| Ritterband 2012 | 7 | 14 | 2 | 14 | 4.9% | 0.36 [0.04, 0.68] | |
| Subtotal (95% CI) | | 14 | | 14 | 4.9% | 0.36 [0.04, 0.68] | |
| Total events | 7 | | 2 | | | | |
| Heterogeneity: Not applicable Test for overall effect: Z = 2.19 (P = 0.03) | | | | | | | |
| restror overall effect. Z = 2.19 (F = 0.03) | | | | | | | |
| 13.1.5 Video delivery | | | | | | | |
| Rybarczyk 2005 (Behavioral Sleep Medicine) | 6 | 12 | 0 | 13 | 6.0% | 0.50 [0.21, 0.79] | _ |
| Savard 2014 | 38 | 57 | 35 | 76 | 15.0% | 0.21 [0.04, 0.37] | |
| Subtotal (95% CI) | | 69 | | 89 | 21.0% | 0.33 [0.04, 0.62] | |
| Total events | 44 | | 35 | | | | |
| Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 3.12$, $df = 1$ (P = 0.08) Test for overall effect: Z = 2.23 (P = 0.03) | I= 68% | | | | | | |
| Total (95% CI) | | 314 | | 344 | 100.0% | 0.35 [0.27, 0.42] | • |
| Total events | 201 | | 107 | | | - / - | |
| Heterogeneity: Tau ² = 0.00; Chi ² = 9.84, df = 8 (P = 0.28) | | | | | | | 1 -05 0 05 1 |
| Test for overall effect: Z = 9.20 (P < 0.00001) | | | | | | | -1 -0.5 0 0.5 1 Favours Control Favours CBT-I |
| Test for subgroup differences: Chiz = 3.41, df = 3 (P = 0.3 | 33), I ^z = 12.1 | % | | | | | Tavours Control Favours Col-1 |

Remission rate: In-person delivery vs. comparison:

Figure S26. Diary/ISI -determined remission rate, post treatment differences for in-person delivery



^{*} each subgroup of delivery method is reported separately in the results section

Responder rates

Figure S27. ISI/Diary -determined responder rate, post treatment differences, CBT-I vs. control

| | Experim | | Contro | | | Risk Difference | Risk Difference |
|---|--------------------------|------------------|--------|------------------|----------------------|--|---|
| Study or Subgroup | Events | Total | Events | Total | Weight | M-H, Random, 95% CI | M-H, Random, 95% CI |
| 6.1.1 In-person, one-on-one delivery | | | | | | | |
| Edinger 2005 (Sleep hygiene) | 8 | 14 | 2 | 20 | 3.7% | 0.47 [0.18, 0.76] | |
| Edinger 2007 | 6 | 17 | 1 | 11 | 3.9% | 0.26 [-0.02, 0.55] | |
| Harvey 2015 | 15 | 22 | 5 | 19 | 4.0% | 0.42 [0.14, 0.70] | |
| Jansson-Frojmark 2012 (J Clin Psycho Med Settings) | 13 | 17 | 1 | 15 | 5.1% | 0.70 [0.46, 0.94] | |
| _ancee 2016 (in-person) | 21 | 29 | 1 | 25 | 7.7% | 0.68 [0.50, 0.86] | |
| Subtotal (95% CI) | | 99 | | 90 | 24.3% | 0.53 [0.36, 0.69] | |
| Fotal events | 63 | | 10 | | | () | |
| | | | 10 | | | | |
| Heterogeneity: Tau² = 0.02; Chi² = 8.94, df = 4 (P = 0.06) Fest for overall effect: Z = 6.21 (P < 0.00001) | , 17= 00% | | | | | | |
| .1.2 Group delivery | | | | | | | |
| Bothelius 2013 | 15 | 26 | 2 | 28 | 6.1% | 0.51 [0.29, 0.72] | |
| Rybarczyk 2002 | 8 | 14 | 1 | 16 | 3.8% | 0.51 [0.22, 0.79] | |
| Rybarczyk 2002 Rybarczyk 2005 (Journal of consulting & clinical) | 35 | 46 | 11 | 46 | 8.0% | 0.52 [0.35, 0.70] | |
| Sandlund 2017 | 41 | | 3 | 71 | | | |
| Sandiund 2017 Subtotal (95% CI) | 41 | 82 168 | 3 | 161 | 12.3% 30.2% | 0.46 [0.34, 0.58] | |
| | | 108 | | 101 | 30.270 | 0.48 [0.40, 0.57] | |
| otal events | 99 | | 17 | | | | |
| Heterogeneity: Tau² = 0.00; Chi² = 0.44, df = 3 (P = 0.93) Fest for overall effect: Z = 11.22 (P < 0.00001) | ; I= 0% | | | | | | |
| .1.3 Telephone delivery | | | | | | | |
| Arnedt 2013 Subtotal (95% CI) | 13 | 15 15 | 7 | 15 15 | 3.4% 3.4% | 0.40 [0.09, 0.71] 0.40 [0.09, 0.71] | |
| otal events | 13 | | 7 | | | | |
| leterogeneity: Not applicable 'est for overall effect: Z= 2.57 (P = 0.01) | | | | | | | |
| 6.1.4 Internet delivery | | | | | | | |
| - | | 40 | 4.0 | | 0.70 | 0.40.00.00.0.501 | |
| Espie 2012 (Imagery relief) | 23 | 43 | 10 | 88 | 8.7% | 0.42 [0.26, 0.58] | |
| Horsch 2017 | 20 | 45 | 7 | 62 | 8.5% | 0.33 [0.17, 0.50] | - |
| ancee 2015 | 13 | 25 | 4 | 22 | 4.6% | 0.34 [0.08, 0.59] | |
| _ancee 2016 (internet) Subtotal (95% CI) | 10 | 26 139 | 1 | 25 197 | 6.5% 28.4% | 0.34 [0.14, 0.55] 0.36 [0.27, 0.46] | |
| Fotal events | 66 | | 22 | | 201176 | 5.55 [5.2., 5.15] | |
| otal events leterogeneity: Tau² = 0.00; Chi² = 0.70, df = 3 (P = 0.87) 'est for overall effect: Z = 7.64 (P < 0.00001) | | | 22 | | | | |
| 6.1.5 Self-help delivery | | | | | | | |
| Jernelov 2012 | 15 | 45 | 1 | 44 | 10.0% | 0.31 [0.17, 0.46] | <u> </u> |
| Subtotal (95% CI) | | 45 | | 44 | 10.0% | 0.31 [0.17, 0.46] | • |
| otal events | 15 | | 1 | | | | |
| Heterogeneity: Not applicable | | | • | | | | |
| est for overall effect: Z = 4.21 (P < 0.0001) | | | | | | | |
| 6.1.6 Video delivery | | | | | | | |
| Rybarczyk 2005 (Behavioral Sleep Medicine) Subtotal (95% CI) | 6 | 12 12 | 0 | 13 13 | 3.8% 3.8% | 0.50 [0.21, 0.79] 0.50 [0.21, 0.79] | |
| otal events | 6 | | 0 | | | _ | |
| leterogeneity: Not applicable lest for overall effect: Z = 3.39 (P = 0.0007) | - | | - | | | | |
| otal (95% CI) | | 478 | | 520 | 100.0% | 0.45 [0.39, 0.51] | • |
| Fotal events | 262 | | 57 | | | | |
| otar events Heterogeneity: Tau² = 0.00; Chi² = 21.21, df = 15 (P = 0.1 Fest for overall effect: Z = 14.30 (P < 0.00001) | | % | 57 | | | ! | -1 -0.5 0 0.5 Favours Control Favours CBTI |
| Test for subgroup differences: $Chi^2 = 7.65$, $df = 5$ (P = 0. | 18), I ² = 34 | .6% | | | | | ravours Control Favours CDII |

*Espie 2012 (imagery and usual care) pooled control date

Lancee 2016 (in-person and internet) uses same control data

Edinger 2005 (usual care and sleep hygiene) pooled control data

Responder rate: Insomnia and no comorbidities

Table S13. Responder rate, post treatment differences, CBT-I vs. control

| Study | Delivery | C | BT-I | С | ontrol | Risk Difference [95% CI] |
|-----------------|-----------------------|--------|-------|--------|--------|--------------------------|
| | method | Events | Total | Events | Total | |
| Edinger 2007 | In-person delivery | 31 | 69 | 1 | 11 | 0.36[0.15, 0.56] |

Responder rate: Comorbid insomnia to psychiatric conditions **Figure S28.** Responder rate, post treatment differences, CBT-I vs. control

| | Favours Co | ontrol | Contr | ol | | Risk Difference | Risk Difference |
|--|-----------------------|--------|--------|-------|--------|---------------------|-------------------------------|
| Study or Subgroup | Events | Total | Events | Total | Weight | M-H, Random, 95% CI | M-H, Random, 95% CI |
| 1.1.1 In-person, one-on-one delivery | | | | | | | |
| Harvey 2015 | 15 | 22 | 5 | 19 | 22.4% | 0.42 [0.14, 0.70] | |
| Subtotal (95% CI) | | 22 | | 19 | 22.4% | 0.42 [0.14, 0.70] | |
| Total events | 15 | | 5 | | | | |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Z = 2.96 (P = 0.003) | | | | | | | |
| 1.1.2 Group delivery | | | | | | | |
| Rybarczyk 2005 (Journal of consulting & clinical) | 35 | 46 | 11 | 46 | 56.9% | 0.52 [0.35, 0.70] | |
| Subtotal (95% CI) | | 46 | | 46 | 56.9% | 0.52 [0.35, 0.70] | • |
| Total events | 35 | | 11 | | | | |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Z = 5.87 (P < 0.00001) | | | | | | | |
| 1.1.5 Video delivery | | | | | | | |
| Rybarczyk 2005 (Behavioral Sleep Medicine) | 6 | 12 | 0 | 13 | 20.7% | 0.50 [0.21, 0.79] | |
| Subtotal (95% CI) | | 12 | | 13 | 20.7% | 0.50 [0.21, 0.79] | |
| Total events | 6 | | 0 | | | | |
| Heterogeneity: Not applicable | | | | | | | |
| Test for overall effect: Z = 3.39 (P = 0.0007) | | | | | | | |
| Total (95% CI) | | 80 | | 78 | 100.0% | 0.49 [0.36, 0.63] | • |
| Total events | 56 | | 16 | | | | |
| Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.38$, $df = 2$ (P = | 0.83); $I^2 = 09$ | 6 | | | | | -1 -0.5 0 0.5 1 |
| Test for overall effect: Z = 7.37 (P < 0.00001) | | | | | | | Favours Control Favours CBT-I |
| Test for subgroup differences: Chi2 = 0.38, df = 2 (| $P = 0.83$), $I^2 =$ | : 0% | | | | | Taroaro comaci. Tavouro obi i |

Responder rate: Comorbid insomnia to medical conditions

Figure S29. Responder rate, post treatment differences, CBT-I vs. control

| | Favours Inter | vention | Contr | ol | | Risk Difference | Risk Difference | |
|--|---------------------------|-----------------|--------|-----------------|-----------------------|--|-------------------------------|---|
| Study or Subgroup | Events | Total | Events | Total | Weight | M-H, Random, 95% CI | M-H, Random, 95% CI | |
| 2.1.1 In-person, one-on-one delivery | | | | | | | | |
| Edinger 2005 (Sleep hygiene) | 8 | 14 | 2 | 20 | 28.3% | 0.47 [0.18, 0.76] | | - |
| Jansson-Frojmark 2012 (J Clin Psycho Med Settings) Subtotal (95% Cl) | 13 | 17 31 | 1 | 15 35 | 42.3% 70.6% | 0.70 [0.46, 0.94] 0.60 [0.37, 0.83] | | _ |
| Total events | 21 | | 3 | | | | | |
| Heterogeneity: Tau² = 0.01; Chi² = 1.47, df = 1 (P = 0.23 Test for overall effect: Z = 5.22 (P < 0.00001) |); I²= 32% | | | | | | | |
| 2.1.2 Group delivery | | | | | | | | |
| Rybarczyk 2002 Subtotal (95% CI) | 8 | 14 14 | 1 | 16 16 | 29.4% 29.4% | 0.51 [0.22, 0.79] 0.51 [0.22, 0.79] | | - |
| Total events Heterogeneity: Not applicable Test for overall effect: Z= 3.50 (P= 0.0005) | 8 | | 1 | | | | | |
| Total (95% CI) | | 45 | | 51 | 100.0% | 0.58 [0.42, 0.73] | • | |
| Total events | 29 | | 4 | | | - · · | | |
| Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.78$, $df = 2$ (P = 0.41) |); I² = 0% | | | | | ļ | 1 -0.5 0 0.5 | |
| Test for overall effect: Z = 7.33 (P < 0.00001) | | | | | | | Favours Control Favours CBT-I | |
| Test for subgroup differences: $Chi^2 = 0.24$, $df = 1$ (P = 0 | .62), I ² = 0% | | | | | | | |

Edinger 2005 (usual care and sleep hygiene) pooled control data

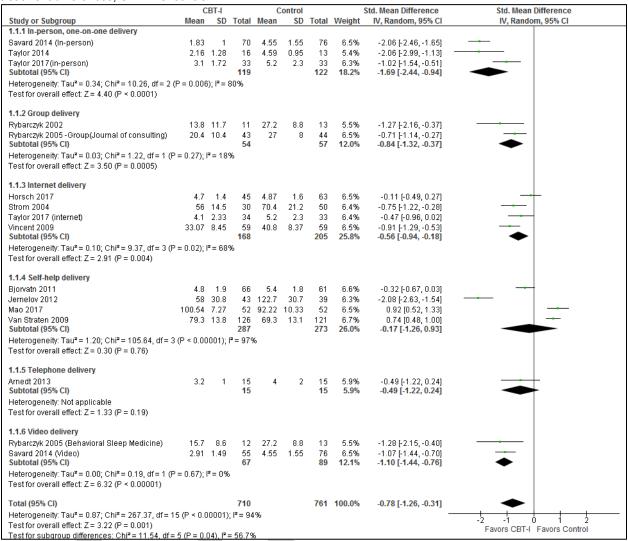
Responder rate: In-person delivery vs. comparison:

Table S14. ISI -determined remission rate, post treatment differences for in-person delivery

| Study | CBT-I In-pe | erson delivery | CBT-I Int | ernet delivery | Risk Difference [95% CI] |
|-------------|-------------|----------------|-----------|----------------|--------------------------|
| | Events | Total | Events | Total | |
| Lancee 2016 | 21 | 30 | 10 | 27 | 0.33[0.08, 0.57] |

Beliefs and attitudes about sleep

Figure S30. Dysfunctional Beliefs and Attitudes about Sleep (DBAS)-determined beliefs and attitudes about sleep, post treatment differences, CBT-I vs. control



^{*}Savard 2014 (in-person and video) uses same control data

Beliefs and attitudes about sleep: Insomnia and no comorbidities

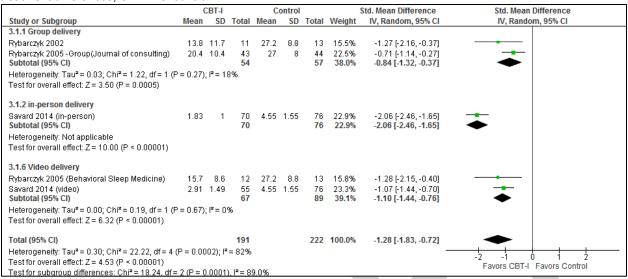
Table S15. Dysfunctional Beliefs and Attitudes about Sleep (DBAS)-determined beliefs and attitudes about sleep, post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | | Control | Std. Mean Difference, | |
|-------------|-----------------------|-------|------|-------|------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Taylor 2014 | In-person delivery | 2.16 | 1.28 | 16 | 4.59 | 0.95 | 13 | -2.06[-2.99, -1.13] |
| Strom 2004 | Internet delivery | 56 | 14.5 | 30 | 70.4 | 21.2 | 50 | -0.75[-1.22, -0.28] |

^{*}Taylor 2017 (in-person and internet) uses same control data

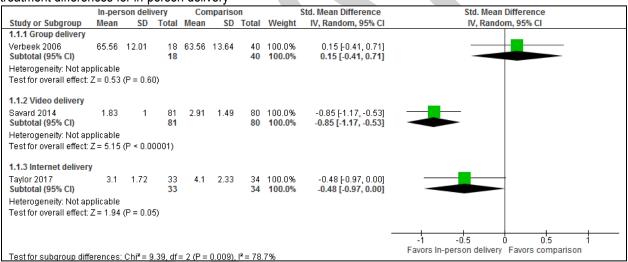
Beliefs and attitudes about sleep: Comorbid medical conditions

Figure S31. Dysfunctional Beliefs and Attitudes about Sleep (DBAS)-determined beliefs and attitudes about sleep, post treatment differences, CBT-I vs. control



Beliefs and attitudes about sleep: In-person delivery vs. comparison:

Figure S32. Dysfunctional Beliefs and Attitudes about Sleep (DBAS)-determined beliefs and attitudes about sleep, post treatment differences for in-person delivery

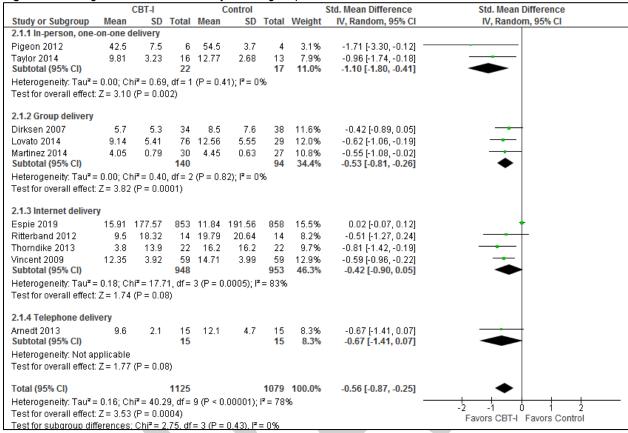


^{*} each subgroup of delivery method is reported separately in the results section

Supplemental material
May 12, 2020

Daytime Fatigue

Figure S33. Fatigue tools-determined daytime fatigue, post treatment differences, CBT-I vs. control



^{*}Espie 2019 converted SE to SD

Daytime Fatigue: Insomnia and no comorbidities

Table S16. Fatigue tools-determined daytime fatigue, post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Std. Mean Difference, |
|----------------|-----------------------|------|-------|-------|-------|---------|-------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Taylor 2014 | In-person delivery | 9.81 | 3.23 | 16 | 12.11 | 2.68 | 13 | -0.96[-1.74, -0.18] |
| Lovato 2014 | Group delivery | 9.14 | 5.41 | 76 | 12.56 | 5.55 | 29 | -0.62[-1.06, -0.19] |

Daytime Fatigue: Insomnia and comorbid psychiatric conditions

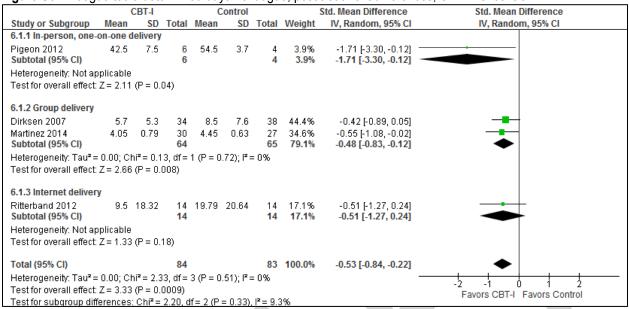
Table S17. Fatigue tools-determined daytime fatigue, post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | | Control | Std. Mean Difference, | |
|-------------------|----------------------|-------|------|-------|-------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Thorndike20 13 | Internet delivery | 3.8 | 13.9 | 22 | 16.18 | 16.16 | 22 | -0.81[-1.42, -0.19] |

^{*}Vincent 2009 converted SE to SD

Daytime Fatigue: Comorbid medical conditions

Figure S34. Fatigue tools-determined daytime fatigue, post treatment differences, CBT-I vs. control



Daytime fatigue: In-person delivery vs. comparison:

Table S18. Diary-determined quality of sleep, post treatment differences for in-person delivery

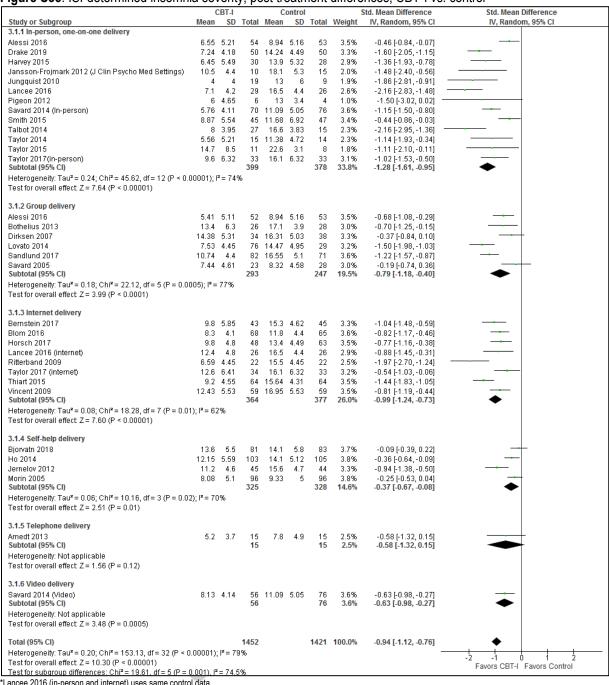
| Study | CB | T-I In-person de | elivery | | CBT-I Interne | t | Std. Mean Difference, |
|-------------------|-------|------------------|---------|-------|---------------|-------|-----------------------|
| | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Holmqvist 2014 | 12.65 | 4.72 | 32 | 13.53 | 5.24 | 38 | -0.17[-0.64, 0.30] |

| Study | CB. | T-I In-person d | elivery | CBT- | -I Telehealth de | elivery | Std. Mean Difference, |
|-------------------|-------|-----------------|---------|------|------------------|---------|-----------------------|
| | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Holmqvist 2014 | 12.65 | 4.72 | 32 | 12.5 | 4.75 | 32 | 0.03[-0.46, 0.52] |

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Insomnia severity

Figure S35. ISI-determined insomnia severity, post treatment differences, CBT-I vs. control



^{*}Lancee 2016 (in-person and internet) uses same control data

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^{*}Savard 2014 (in-person and video) uses same control data

^{*}Taylor 2017 (in-person and internet) uses same control data

^{*}Bernstein 2017 SD calculated from CI

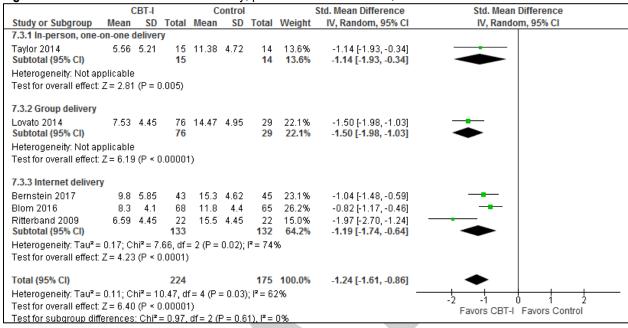
^{*}Morin 2005 SD calculated from CI

^{*}Alessi 2016 (in-person and group use same control data) SD calculated from SE

^{*}Ritterband 2009 SD calculated from CI

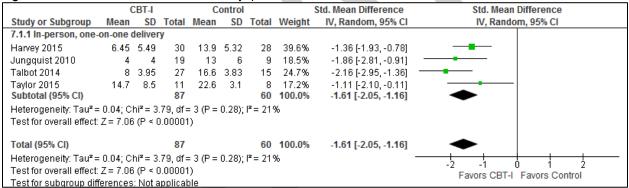
Insomnia severity: Insomnia and no comorbidities

Figure \$36. ISI-determined insomnia severity, post treatment differences, CBT-I vs. control



Insomnia severity: Insomnia and comorbid psychiatric conditions

Figure S37. ISI-determined insomnia severity, post treatment differences, CBT-I vs. control



Insomnia severity: Comorbid medical conditions

Figure S38. ISI-determined insomnia severity, post treatment differences, CBT-I vs. control

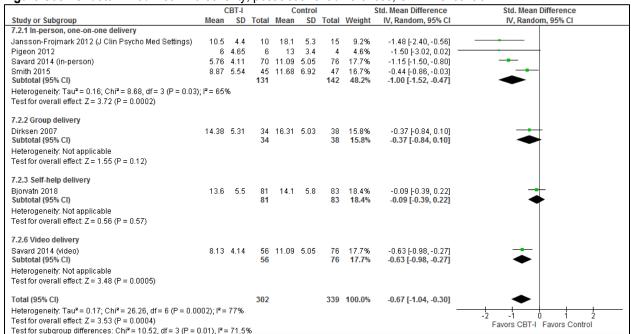
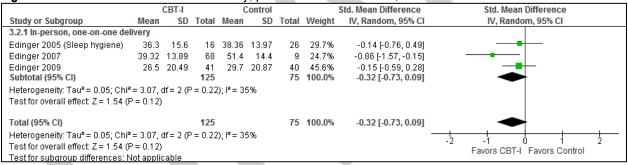


Figure S39. ISQ-determined insomnia severity, post treatment differences, CBT-I vs. control



^{*}Edinger 2005 usual care and sleep hygiene data pooled

Insomnia severity: Insomnia and no comorbidities

Table S19 ISQ-determined insomnia severity, post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Std. Mean Difference, |
|-----------------|-----------------------|-------|-------|-------|------|---------|-------|-----------------------|
| • | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Edinger 2007 | In-person delivery | 39.32 | 13.89 | 68 | 51.4 | 14.4 | 9 | -0.86[-1.57, -0.15] |
| Edinger 2009 | In-person delivery | 26.5 | 20.49 | 41 | 29.7 | 20.87 | 40 | -0.15[-0.59, 0.28] |

Insomnia severity: Comorbid medical conditions

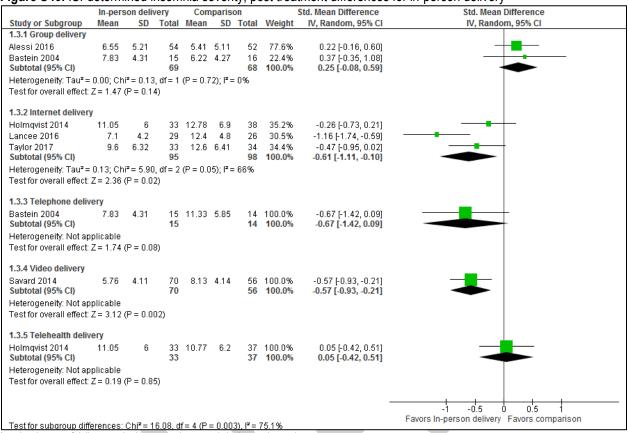
Table S20. ISQ-determined insomnia severity, post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | | Control | Std. Mean Difference, | |
|-----------------|-----------------------|-------|------|-------|-------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Edinger 2005 | In-person delivery | 36.3 | 15.6 | 16 | 38.36 | 13.97 | 26 | -0.14[-0.76, -0.49] |

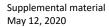
^{*}pooled data of sleep hygiene and usual care groups

Insomnia severity: In-person delivery vs. comparison:

Figure S40. ISI-determined insomnia severity, post treatment differences for in-person delivery

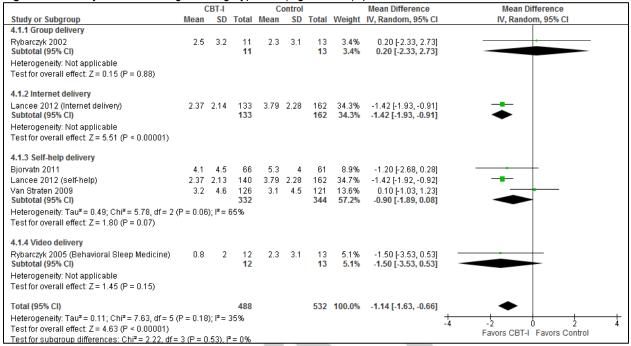


^{*} each subgroup of delivery method is reported separately in the results section



Nights using hypnotics

Figure S41. Diary-determined nights using hypnotics(nights/week), post treatment differences, CBT-I vs. control



^{*}Lancee 2012 (internet and self-help) uses same control data

Nights using hypnotics: Insomnia and no comorbidities

Table S21. Diary-determined number of awakenings (no./night), post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | | Control | Std. Mean Difference, | |
|------------|----------------|-------|-----|-------|------|---------|-----------------------|-------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Morin 1993 | Group delivery | 2.5 | 3.2 | 11 | 2.3 | 3.1 | 13 | 0.20[-2.33, 2.73] |

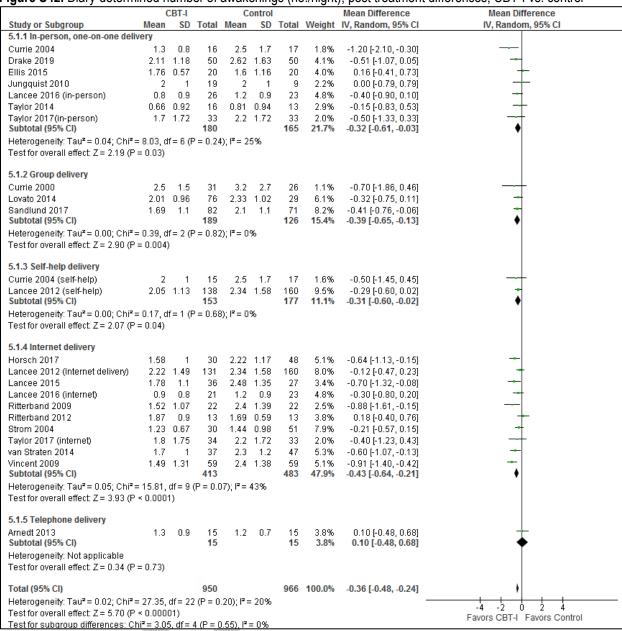
Nights using hypnotics: Insomnia and comorbid psychiatric conditions

Table S22. Diary-determined number of awakenings (no./night), post treatment differences, CBT-I vs. control

| Study | Delivery | ica namba | CBT-I | illiga (110./11! | giit), post ti | Control | iciciicos, OL | Mean Difference, [95% CI] |
|-------------------|----------------|-----------|-------|------------------|----------------|---------|---------------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Rybarczyk 2005 | Video Delivery | 0.8 | 2 | 12 | 2.3 | 3.1 | 13 | -1.50[-3,53, 0.53] |

Number of awakenings

Figure S42. Diary-determined number of awakenings (no./night), post treatment differences, CBT-I vs. control

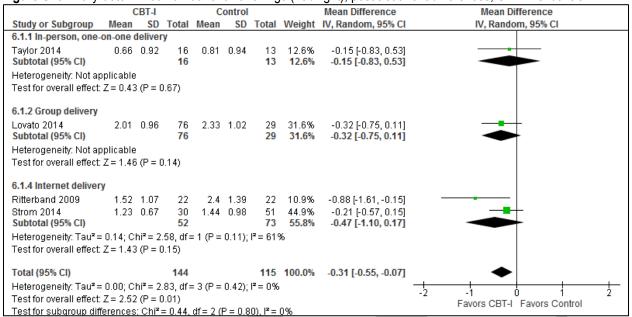


*Currie 2004 (in-person and self-help) uses same control data Lancee 2012 (internet and self-help) uses same control data Lancee 2016 (in-person and internet) uses same control data

^{*}Taylor 2017 (in-person and internet) uses same control data

Number of awakenings: Insomnia and no comorbidities

Figure S43. Diary-determined number of awakenings (no./night), post treatment differences, CBT-I vs. control



Number of awakenings: Insomnia and comorbid psychiatric conditions

Table S23. Diary-determined number of awakenings (no./night), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|-------------------|-----------------------|------|-------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Currie 2004 | In-person delivery | 1.64 | 0.9 | 31 | 2.5 | 1.7 | 17 | -0.86[-1.73, 0.01] |
| Jungquist 2010 | In-person delivery | 2 | 1 | 19 | 2 | 1 | 9 | 0.00[-0.79, 0.79] |

^{*}Currie 2004 (self-help and in-person) pooled data

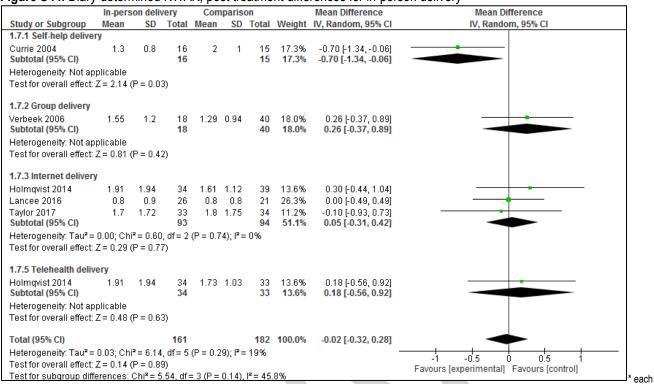
Number of awakenings: Comorbid medical conditions

Table S24. Diary-determined number of awakenings (no./night), post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | | Control | | Mean Difference, [95% CI] |
|--------------------|----------------------|-------|-----|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Currie 2000 | group delivery | 2.5 | 1.5 | 31 | 3.2 | 2.7 | 26 | -0.70[-1.86, 0.46] |
| Ritterband 2012 | internet delivery | 1.87 | 0.9 | 13 | 1.69 | 0.59 | 13 | 0.18[-0.40, 0.76] |

Number of awakenings: In-person delivery vs. comparison:

Figure S44. Diary-determined NWAK, post treatment differences for in-person delivery

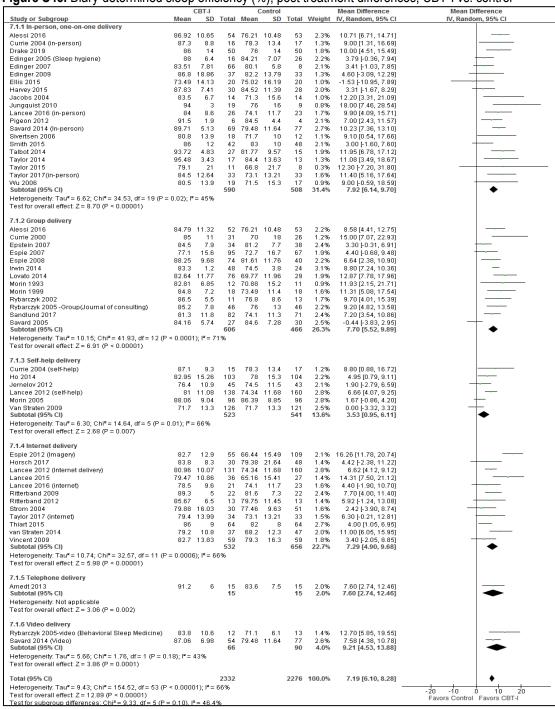


subgroup of delivery method is reported separately in the results section



Sleep efficiency

Figure S45. Diary-determined sleep efficiency (%), post treatment differences, CBT-I vs. control



*Currie 2004 (in-person and self-help) uses same control data

Edinger 2005 usual and sleep hygiene pooled control data

Lancee 2012 (internet and self-help) uses same control data

Lancee 2016 (in-person and internet) uses same control data

Savard 2014 (in-person and video) uses same control data

Espie 2012 (imagery and usual care pooled control data

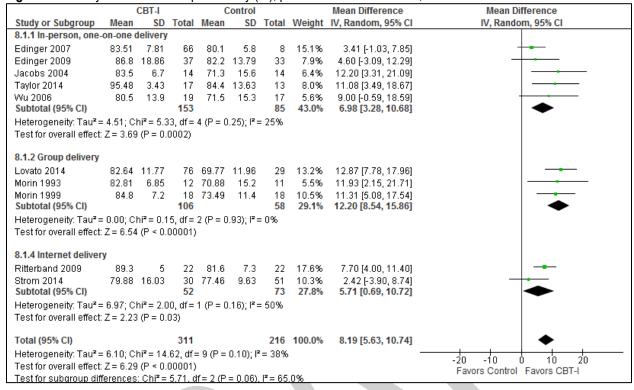
Taylor 2017 (in-person and internet) uses same control data, converted SE to SD

Morin 2005 SD calculated from 95% CI

Alessi 2016 (in-person and group) uses same control data, converted SE to SD

Sleep efficiency (Diary): Insomnia and no comorbidities

Figure S46. Diary-determined sleep efficiency (%), post treatment differences, CBT-I vs. control



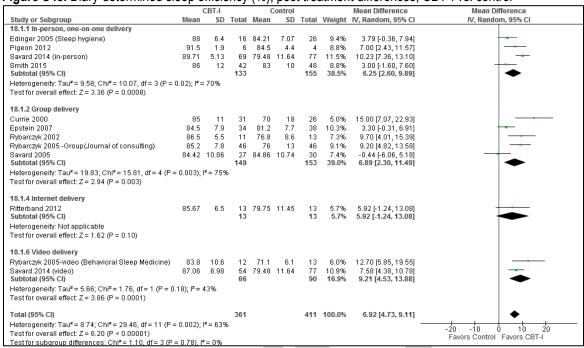
Sleep efficiency (Diary): Insomnia and comorbid psychiatric conditions

Figure S47. Diary- determined sleep efficiency (%), post treatment differences, CBT-I vs. control

| | 0 | :BT-I | | (| ontrol | | | Mean Difference | Mean Difference |
|--|-----------|-------|-----------------|-------|--------|-----------------|------------------------|---|--|
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| 17.1.1 In-person, one-on- | one deli | very | | | | | | | |
| Currie 2004 (in-person) | 87.3 | 8.8 | 16 | 78.3 | 13.4 | 17 | 17.2% | 9.00 [1.31, 16.69] | |
| Harvey 2015 | 87.83 | 7.41 | 30 | 84.52 | 11.39 | 28 | 25.6% | 3.31 [-1.67, 8.29] | • - |
| Jungquist 2010 | 94 | 3 | 19 | 76 | 16 | 9 | 11.5% | 18.00 [7.46, 28.54] | |
| Talbot 2014 | 93.72 | 4.83 | 27 | 81.77 | 9.57 | 15 | 24.9% | 11.95 [6.78, 17.12] | |
| Taylor 2015 | 79.1 | 21 | 11 | 66.8 | 21.7 | 8 | 4.2% | 12.30 [-7.20, 31.80] | |
| Subtotal (95% CI) | | | 103 | | | 77 | 83.4% | 9.75 [4.52, 14.98] | • |
| Heterogeneity: Tau ² = 18.0 Test for overall effect: Z = 3 17.1.3 Self-help delivery | | | | , | -71. | | | | |
| Currie 2004 (self-help) Subtotal (95% CI) | 87.1 | 9.3 | 15 15 | 78.3 | 13.4 | 17 17 | 16.6% 16.6 % | 8.80 [0.88, 16.72] 8.80 [0.88, 16.72] | • |
| Heterogeneity: Not applicate Test for overall effect: Z = 3 | | 0.03) | | | | | | | |
| Total (95% CI) | | | 118 | | | 94 | 100.0% | 9.41 [5.19, 13.64] | • |
| Heterogeneity: Tau ² = 11.6 Test for overall effect: Z = 6 Test for subgroup differen | 4.37 (P < | 0.000 | 11) | • | | | | - | -20 -10 0 10 20 Favors Control Favors CBT-I |

Sleep efficiency (Diary): Comorbid medical insomnia

Figure S48. Diary-determined sleep efficiency (%), post treatment differences, CBT-I vs. control



^{*}pooled control data (usual care and sleep hygiene) for Edinger 2005

Figure S49. Actigraphy-determined sleep efficiency (%), post treatment differences, CBT-I vs. control

| <u> </u> | | | | | | \ /1 | | | |
|--|------------|-----------|----------|----------------------|---------|-------|--------|----------------------|--|
| | | CBT-I | | (| ontrol | | | Mean Difference | Mean Difference |
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| 7.2.1 In-person, one-on-one into | erventio | n | | | | | | | |
| Alessi 2016 | 85.27 | 6.98 | 54 | 82.49 | 6.91 | 53 | 12.2% | 2.78 [0.15, 5.41] | |
| Edinger 2005 (Sleep hygiene) | 88 | 3.87 | 15 | 84.55 | 6.34 | 23 | 9.4% | 3.45 [0.20, 6.70] | |
| Edinger 2007 | 76.48 | 7.86 | 63 | 77 | 4.5 | 10 | 8.8% | -0.52 [-3.92, 2.88] | |
| Edinger 2009 | 80.6 | 16.08 | 33 | 79 | 14.94 | 33 | 2.4% | 1.60 [-5.89, 9.09] | |
| Smith 2015 | 83 | 12 | 38 | 79 | 15 | 46 | 3.9% | 4.00 [-1.77, 9.77] | |
| Taylor 2017(in-person) | 73.3 | 11.49 | 33 | 73.2 | 9.77 | 33 | 4.7% | 0.10 [-5.05, 5.25] | |
| Subtotal (95% CI) | | | 236 | | | 198 | 41.4% | 2.03 [0.47, 3.59] | ◆ |
| Heterogeneity: Tau² = 0.00; Chi² | | | ' = 0.52 |); $I^2 = 0^{\circ}$ | % | | | | |
| Test for overall effect: Z = 2.55 (F | o = 0.01) | | | | | | | | |
| 7.2.2 Group delivery | | | | | | | | | |
| Alessi 2016 | 84.16 | 7.13 | 52 | 82.49 | 6.91 | 53 | 11.9% | 1.67 [-1.02, 4.36] | +•- |
| Epstein 2007 | 88.9 | 4.5 | 31 | 86.2 | 8.1 | 30 | 9.2% | 2.70 [-0.60, 6.00] | • - |
| Espie 2007 | 82.7 | 5.71 | 69 | 84.3 | 4 | 57 | 18.2% | -1.60 [-3.30, 0.10] | |
| Espie 2008 | 84.69 | 6.5 | 74 | 84.71 | 6.08 | 39 | 13.4% | -0.02 [-2.44, 2.40] | + |
| Rybarczyk 2002 | 76 | 13.7 | 11 | 76.8 | 8.6 | 13 | 1.6% | -0.80 [-10.15, 8.55] | |
| Subtotal (95% CI) | | | 237 | | | 192 | 54.2% | 0.29 [-1.45, 2.04] | • |
| Heterogeneity: Tau ² = 1.70; Chi ² | = 7.44, | df = 4 (P | ' = 0.11 |); $I^2 = 46$ | 6% | | | | |
| Test for overall effect: Z = 0.33 (F | P = 0.74 | | | | | | | | |
| 7.2.3 Internet delivery | | | | | | | | | |
| Taylor 2017 (internet) | 73.1 | 12.25 | 34 | 73.2 | 9.77 | 33 | 4.5% | -0.10 [-5.40, 5.20] | |
| Subtotal (95% CI) | | | 34 | | | 33 | 4.5% | -0.10 [-5.40, 5.20] | - |
| Heterogeneity: Not applicable | | | | | | | | | |
| Test for overall effect: Z = 0.04 (F | P = 0.97) | | | | | | | | |
| Total (95% CI) | | | 507 | | | 423 | 100.0% | 0.95 [-0.27, 2.17] | • |
| Heterogeneity: Tau ² = 1.38; Chi ² | = 16 44 | df = 11 | P = 0 | 13): F= | 33% | | | , | |
| Test for overall effect: Z = 1.53 (F | | | , - 0 | ,, . | /0 | | | | -20 -10 0 10 20 |
| Test for subgroup differences: C | , | |) (P = 0 | 31) [2: | : 15 1% | | | | Favors Control Favors CBT-I |
| rock for oungroup amorbiless. C | //// - Z.c | , on - 2 | - ,, - 0 | 17.1 - | 70.170 | | | | |

^{*} Edinger 2005 (usual and sleep hygiene control data pooled) converted SE to SD Taylor 2017 (in-person and internet) uses same control data, converted SE to SD Alessi 2016 (in-person and group) uses same control data, converted SE to SD

Sleep efficiency (Act): Insomnia and no comorbidities

Table S25. Act-determined sleep efficiency (%), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|-----------------|--------------------------|-------|-------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2007 | In-person, one-on-one | 76.48 | 7.86 | 63 | 77 | 4.5 | 10 | -0.52[-3.92, 2.88] |
| Edinger 2009 | In-person, one-on-one | 80.6 | 16.08 | 33 | 79 | 14.94 | 33 | 1.60[-5.89, 9.09] |

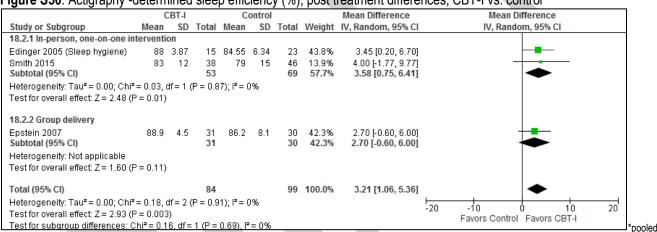
Sleep efficiency (Act): Insomnia and comorbid psychiatric conditions

Table S26. Act-determined sleep efficiency (%), post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | | Control | | Mean Difference, [95% CI] |
|-------------------|----------------|-------|------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Rybarczyk 2002 | Group delivery | 76 | 13.7 | 11 | 76.8 | 8.6 | 13 | -0.80 [-10.15, 8.55] |

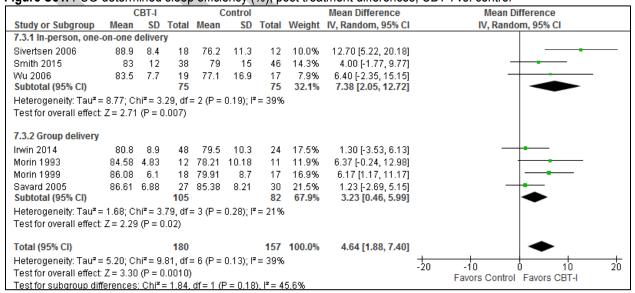
Sleep efficiency (Act): Comorbid medical insomnia

Figure \$50. Actigraphy -determined sleep efficiency (%), post treatment differences, CBT-I vs. control



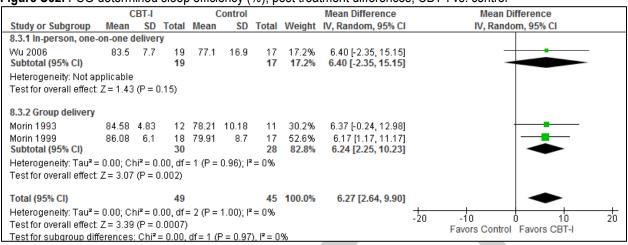
control data (usual care and sleep hygiene) for Edinger 2005

Figure S51. PSG-determined sleep efficiency (%), post treatment differences, CBT-I vs. control



Sleep efficiency (PSG): Insomnia and no comorbidities

Figure S52. PSG-determined sleep efficiency (%), post treatment differences, CBT-I vs. control



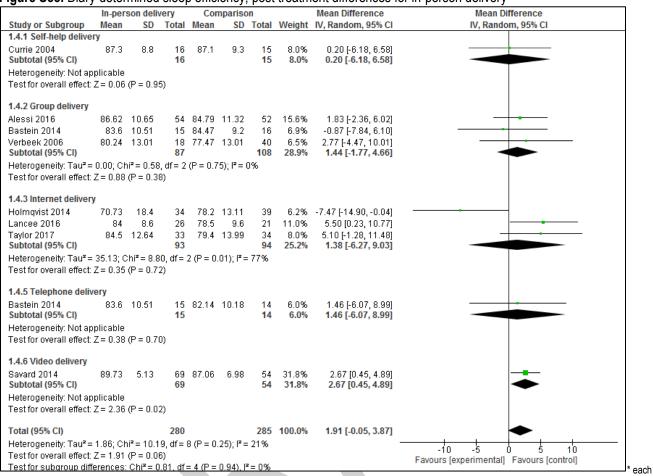
Sleep efficiency (PSG): Comorbid medical insomnia

Table S27. PSG -determined sleep efficiency (%), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|-------------|--------------------------|-------|-------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Smith 2015 | In-person, one-on-one | 83 | 12 | 38 | 79 | 15 | 46 | 4.00 [-1.77, 9.77] |
| Savard 2005 | Group delivery | 86.61 | 6.88 | 27 | 85.38 | 8.21 | 30 | 1.23 [-2.69, 5.15] |

Sleep efficiency (Diary): In-person delivery vs. comparison:

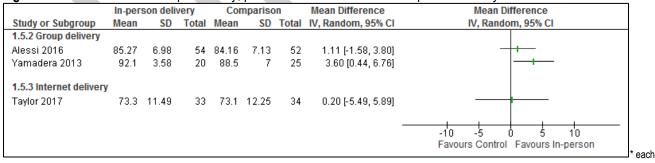
Figure S53. Diary-determined sleep efficiency, post treatment differences for in-person delivery



subgroup of delivery method is reported separately in the results section

Sleep efficiency (Act): In-person delivery vs. comparison:

Figure S54. Act-determined sleep efficiency, post treatment differences for in-person delivery

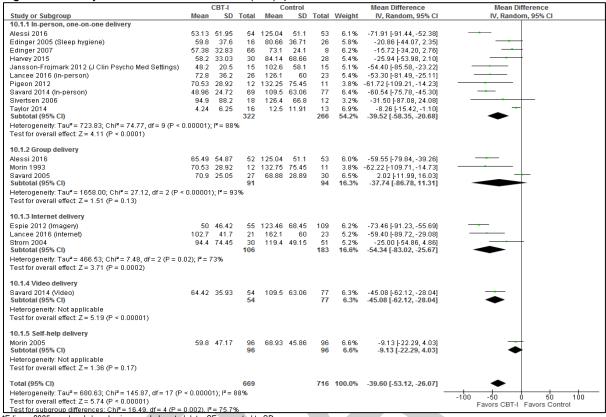


subgroup of delivery method is reported separately in the results section

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Total wake time

Figure S55. Diary-determined total wake time (min), post treatment differences, CBT-I vs. control



^{*}Edinger 2005 usual and sleep hygiene pooled control data, SE converted to SD

Lancee 2016 (in-person and internet) uses same control data

Savard 2014 (in-person and video) uses same control data

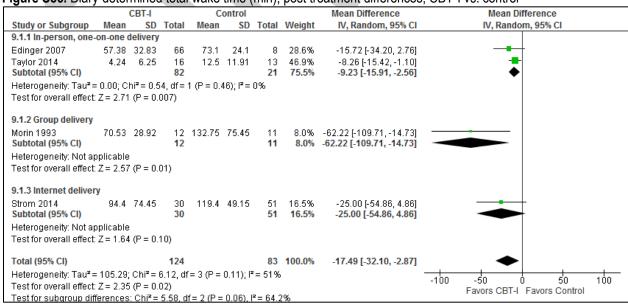
Espie 2012 (imagery and usual care pooled data, SE converted to SD

Morin 2005 SD calculated using 95%CI

Alessi 2016 (in-person and group) uses same control data, SE converted to SD

Total wake time (Diary): Insomnia and no comorbidities

Figure S56. Diary-determined total wake time (min), post treatment differences, CBT-I vs. control



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Total wake time: Insomnia and comorbid psychiatric conditions

Table S28, Diary-determined total awake time (min), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|-------------|--------------------------|------|-------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harvey 2015 | In-person, one-on-one | 58.2 | 33.03 | 30 | 84.14 | 68.66 | 28 | -25.94 [-53.98, 2.10] |

Total wake time: Comorbid medical conditions

Figure S57. Diary-determined total awake time (min), post treatment differences, CBT-I vs. control

| | | CBT-I | | С | ontrol | | | Mean Difference | Mean Difference |
|--|-------------|-------|-------|--------|--------|-------|--------|--------------------------|---|
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| 28.1.1 In-person, one-on-one delivery | | | | | | | | | |
| Edinger 2005 (Sleep hygiene) | 59.8 | 37.6 | 16 | 80.66 | 36.71 | 26 | 18.0% | -20.86 [-44.07, 2.35] | |
| Jansson-Frojmark 2012 (J Clin Psycho Med Settings) | 48.2 | 20.5 | 15 | 102.6 | 58.1 | 15 | 14.9% | -54.40 [-85.58, -23.22] | |
| Pigeon 2012 | 70.53 | 28.92 | 12 | 132.25 | 75.45 | 11 | 9.8% | -61.72 [-109.21, -14.23] | |
| Bavard 2014 (in-person) | 48.96 | 24.72 | 69 | 109.5 | 63.06 | 77 | 21.1% | -60.54 [-75.78, -45.30] | |
| Subtotal (95% CI) | | | 112 | | | 129 | 63.7% | -48.02 [-69.84, -26.20] | • |
| Heterogeneity: Tau² = 295.13; Chi² = 8.20, df = 3 (P = 0.0 | 04); I² = 6 | 33% | | | | | | | |
| Fest for overall effect: Z = 4.31 (P < 0.0001) | | | | | | | | | |
| 8.1.2 Group delivery | | | | | | | | | |
| avard 2005 | 69.52 | 55.08 | 27 | 67.41 | 54.28 | 30 | 15.9% | 2.11 [-26.33, 30.55] | |
| ubtotal (95% CI) | | | 27 | | | 30 | 15.9% | 2.11 [-26.33, 30.55] | - |
| leterogeneity: Not applicable | | | | | | | | | |
| est for overall effect: Z = 0.15 (P = 0.88) | | | | | | | | | |
| 28.1.4 Video delivery | | | | | | | | | |
| Savard 2014 (video) | 64.42 | 35.93 | 54 | 109.5 | 63.06 | 77 | 20.4% | -45.08 [-62.12, -28.04] | |
| ubtotal (95% CI) | | | 54 | | | 77 | 20.4% | -45.08 [-62.12, -28.04] | • |
| leterogeneity: Not applicable | | | | | | | | | |
| est for overall effect: Z = 5.19 (P < 0.00001) | | | | | | | | | |
| otal (95% CI) | | | 193 | | | 236 | 100.0% | -39.51 [-58.84, -20.18] | • |
| Heterogeneity: $Tau^2 = 401.43$; $Chi^2 = 19.40$, $df = 5$ ($P = 0$ | .002); l² | = 74% | | | | | | | |
| est for overall effect: Z = 4.01 (P < 0.0001) | *** | | | | | | | | -100 -50 0 50 10 Favors CBT-I Favors Control |
| est for subgroup differences; $Chi^2 = 9.10$, $df = 2$ (P = 0. | 01). I² = | 78.0% | | | | | | | Favors CB1-1 Favors Control |

^{*}pooled control data (usual care and sleep hygiene) for Edinger 2005

Figure S58. Actigraphy-determined total wake time (min), post treatment differences. CBT-I vs. control

| | (| :BT-I | | C | ontrol | | | Mean Difference | | Mean Difference | | |
|---|-----------------|-----------|--------|------------------------|--------|-------|--------|------------------------|------|--------------------------------|-------|-----|
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | | IV, Random, 95% CI | | |
| 10.2.1 In-person, one-on-one de | elivery | | | | | | | | | | | |
| Edinger 2005 (Sleep hygiene) | 58.8 | 19.36 | 15 | 77.57 | 34.23 | 23 | 25.4% | -18.77 [-35.85, -1.69] | | - | | |
| Edinger 2007 | 105.97 | 37.82 | 66 | 103.4 | 24.8 | 10 | 23.9% | 2.57 [-15.31, 20.45] | | | | |
| Taylor 2014 | 14.68 | 8.09 | 7 | 18.47 | 12.55 | 13 | 50.7% | -3.79 [-12.87, 5.29] | | | | |
| Subtotal (95% CI) | | | 88 | | | 46 | 100.0% | -6.08 [-16.42, 4.25] | | • | | |
| Heterogeneity: Tau ² = 33.37; Ch | $i^2 = 3.24, 0$ | df = 2 (P | = 0.20 |); I ^z = 38 | 3% | | | | | | | |
| Test for overall effect: $Z = 1.15$ (F | o = 0.25) | | | | | | | | | | | |
| Total (95% CI) | | | 88 | | | 46 | 100.0% | -6.08 [-16.42, 4.25] | | • | | |
| Heterogeneity: Tau ² = 33.37; Ch | $i^2 = 3.24, 0$ | df = 2 (P | = 0.20 |); l ^z = 38 | 3% | | | | 400 | - <u>-</u> - | | 400 |
| Test for overall effect: $Z = 1.15$ (F | P = 0.25) | | | | | | | | -100 | -50 0 Favors CBT-I Favors C | 50 | 100 |
| Test for subgroup differences: N | lot applica | able | | | | | | | | ravois CDI-I Favois C | OHEOF | |

^{*}Edinger 2005 usual and sleep hygiene pooled control data, SE converted to SD

Table S29. Act-determined total wake time (min), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|-----------------|--------------------------|--------|-------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2007 | In-person, one-on-one | 105.97 | 37.82 | 66 | 103.4 | 24.8 | 10 | 2.57 [-15.31, 20.45] |
| Taylor 2014 | In-person, one-on-one | 14.68 | 8.09 | 7 | 18.47 | 12.55 | 13 | -3.79[-12.87, 5.29] |

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Total wake time: Comorbid medical conditions

Table S30. Act-determined total wake time (min), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|-----------------|--------------------------|------|-------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person, one-on-one | 58.8 | 19.36 | 15 | 77.57 | 34.28 | 23 | -18.77[-35.87, -1.67] |

^{*}pooled control data (usual care and sleep hygiene) for Edinger 2005

Figure \$59. PSG-determined total wake time (min), post treatment differences, CBT-I vs. control

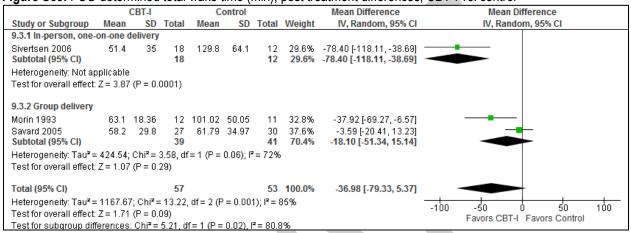


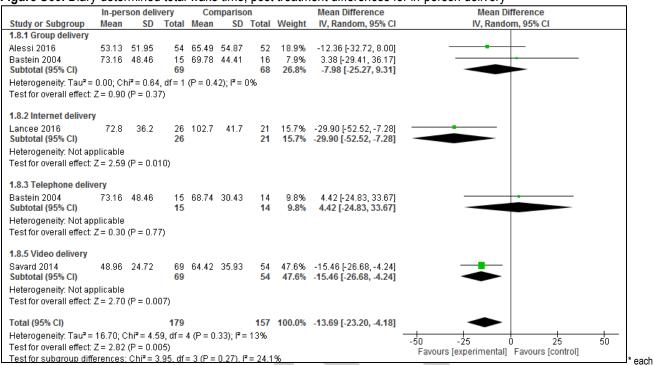
Table S31, PSG-determined total wake time (min), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I | | | Control | | Mean Difference, [95% CI] |
|------------|----------------|------|-------|-------|--------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Morin 1993 | Group delivery | 63.1 | 18.36 | 12 | 101.02 | 50.05 | 11 | -37.92 [-69.27, -6.57] |

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Total wake time (Diary): In-person delivery vs. comparison:

Figure S60. Diary-determined total wake time, post treatment differences for in-person delivery



subgroup of delivery method is reported separately in the results section

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Total sleep time

Figure S61. Diary-determined TST (minutes), post treatment differences, CBT-I vs. control

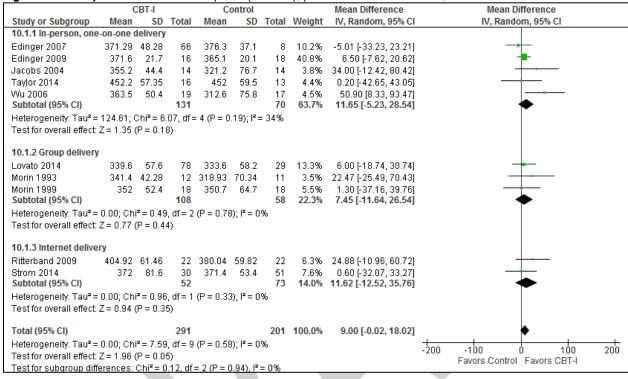
| tudy or Subgroup | Mean | CBT-I SD | Total | Mean | ontrol SD | Total | Weight | Mean Difference IV, Random, 95% CI | Mean Difference IV, Random, 95% CI |
|---|---------------|-------------|-------|--------|--------------|-------|--------|---------------------------------------|---------------------------------------|
| 1.1 In-person, one-on-one delivery | | | | _ | | | | | |
| urrie 2004 (in-person) | 402 | 72 | 16 | 342 | 72 | 17 | 0.9% | 60.00 [10.85, 109.15] | |
| rake 2019 | 373 | 78 | 50 | 361 | 66 | 50 | 2.1% | 12.00 [-16.32, 40.32] | |
| dinger 2005 (Sleep hygiene) | 433.2 | 50.4 | | 427.46 | | 26 | 1.6% | 5.74 [-27.93, 39.41] | |
| dinger 2007 | 371.29 | | 66 | 376.3 | 37.1 | 8 | 2.1% | -5.01 [-33.23, 23.21] | <u> </u> |
| dinger 2009 | 371.6 | 21.7 | 16 | 365.1 | 20.1 | 18 | 4.2% | 6.50 [-7.62, 20.62] | † |
| lis 2015 | 349.33 | 71 | | 344.12 | 60.4 | 20 | 1.2% | 5.21 [-35.64, 46.06] | |
| arvey 2015 | 436 | | 30 | 441.67 | | 28 | 1.0% | -5.67 [-51.76, 40.42] | |
| icobs 2004 | 355.2 | 44.4 | 14 | 321.2 | 76.7 | 14 | 1.0% | 34.00 [-12.42, 80.42] | |
| nsson-Frojmark 2012 (J Clin Psycho Med Settings) | 385.3 | 22.7 | 15 | 383.7 | 60.7 | 15 | 1.7% | 1.60 [-31.20, 34.40] | |
| ngquist 2010 | 408 | 35 | 19 | 352 | 73 | 9 | 0.8% | 56.00 [5.78, 106.22] | |
| incee 2016 (in-person) | 395.1 | 56.2 | 26 | 361.8 | 59.6 | 23 | 1.7% | 33.30 [0.74, 65.86] | |
| geon 2012 | 375 | 17.7 | 6 | 378.8 | 28 | 4 | 1.8% | -3.80 [-34.68, 27.08] | |
| ward 2014 (In-person) | 430.03 | 52.69 | 69 | 425.94 | 72.38 | 77 | 3.0% | 4.09 [-16.30, 24.48] | + |
| vertsen 2006 | 352 | 52.4 | 18 | 350.7 | 64.7 | 18 | 1.3% | 1.30 [-37.16, 39.76] | |
| nith 2015 | 363.33 | 79.37 | 42 | 404.41 | 76.69 | 48 | 1.7% | -41.08 [-73.44, -8.72] | |
| lbot 2014 | 437.4 | 75 | 27 | 394.2 | 44.4 | 15 | 1.4% | 43.20 [7.07, 79.33] | |
| ylor 2014 | 452.2 | 57.35 | 16 | 452 | 59.5 | 13 | 1.1% | 0.20 [-42.65, 43.05] | |
| rylor 2015 | 390 | 156 | 11 | 312 | 132 | 8 | 0.1% | 78.00 [-51.87, 207.87] | - |
| ylor 2017(in-person) | 330 | | 33 | 318 | | 33 | 1.6% | 12.00 [-21.26, 45.26] | |
| u 2006 | 363.5 | 50.4 | 19 | 312.6 | 75.8 | 17 | 1.1% | 50.90 [8.33, 93.47] | l—— |
| ibtotal (95% CI) | 200.0 | 20.7 | 529 | 2.0 | . 0.0 | 461 | 31.4% | 11.08 [1.35, 20.80] | • |
| eterogeneity: Tau² = 171.91; Chi² = 31.20, df = 19 (P = est for overall effect: Z = 2.23 (P = 0.03) | 0.04); 2= | 39% | | | | | | . , . | |
| 1.2 Group delivery | | | | | | | 0.00 | 20.0014074.007 | |
| urrie 2000 | 366 | 96 | 31 | 330 | 84 | 26 | 0.9% | 36.00 [-10.74, 82.74] | |
| stein 2007 | 396 | 44.2 | 34 | 405.1 | 52.7 | 38 | 2.8% | -9.10 [-31.49, 13.29] | - |
| pie 2007 | 344.4 | 71.4 | 95 | 354.6 | 86.4 | 67 | 2.4% | -10.20 [-35.38, 14.98] | - |
| pie 2008 | 417.24 | 65.55 | | 395.73 | 96.8 | 41 | 1.6% | 21.51 [-11.67, 54.69] | |
| vin 2014 | 381.8 | 8.7 | 48 | 372.1 | 24.8 | 24 | 5.0% | 9.70 [-0.52, 19.92] | <u> </u> |
| vato 2014 | 339.6 | 57.6 | 78 | 333.6 | 58.2 | 29 | 2.4% | 6.00 [-18.74, 30.74] | |
| orin 1993 | 341.4 | | | 318.93 | | 11 | 0.9% | 22.47 [-25.49, 70.43] | |
| orin 1999 | 352 | 52.4 | 18 | 350.7 | 64.7 | 18 | 1.3% | 1.30 [-37.16, 39.76] | |
| /barczyk 2002 | 334.1 | 37.3 | 11 | 378.4 | 56.8 | 13 | 1.3% | -44.30 [-82.24, -6.36] | |
| /barczyk 2005 - Group(Journal of consulting) | 371.7 | 59.7 | 46 | 371.2 | 66.5 | 46 | 2.3% | 0.50 [-25.33, 26.33] | |
| andlund 2017 | 384.21 | 56.2 | | 360.81 | 60.1 | 71 | 3.3% | 23.40 [4.87, 41.93] | |
| avard 2005 | 379.5 | 44.58 | 27 | 387.48 | 55.46 | 30 | 2.3% | -7.98 [-33.99, 18.03] | - |
| ıbtotal (95% CI) | | | 556 | | | 414 | 26.7% | 4.02 [-5.51, 13.55] | • |
| eterogeneity: Tau² = 98.70; Chi² = 18.20, df = 11 (P = i est for overall effect: Z = 0.83 (P = 0.41) | 0.08); I² = · | 10% | | | | | | | |
| 4.2 Internet delivery | | | | | | | | | |
| 1.3 Internet delivery | | | | | | | _ | | |
| spie 2012 (Imagery) | 345.06 | 80.09 | | 335.26 | | 109 | 2.1% | 9.80 [-17.60, 37.20] | - |
| orsch 2017 | 417 | 62 | | 397.49 | | 48 | 2.0% | 19.51 [-9.57, 48.59] | |
| incee 2012 (Internet delivery) | 386.48 | | | 366.02 | 59.5 | 160 | 4.3% | 20.46 [6.73, 34.19] | |
| incee 2015 | 375.84 | 59.71 | 36 | 334.31 | 79 | 27 | 1.5% | 41.53 [5.92, 77.14] | |
| incee 2016 (internet) | 382.6 | 57.7 | 21 | 361.8 | 59.6 | 23 | 1.5% | 20.80 [-13.87, 55.47] | + |
| tterband 2009 | 404.92 | 61.46 | 22 | 380.04 | 59.82 | 22 | 1.5% | 24.88 [-10.96, 60.72] | + |
| tterband 2012 | 396.05 | 49.64 | 13 | 373.05 | 63.6 | 13 | 1.1% | 23.00 [-20.86, 66.86] | + |
| rom 2004 | 372 | 81.6 | 30 | 371.4 | 53.4 | 51 | 1.7% | 0.60 [-32.07, 33.27] | |
| ylor 2017 (internet) | 330 | 69.97 | 34 | 318 | 68.93 | 33 | 1.6% | 12.00 [-21.26, 45.26] | |
| n Straten 2014 | 372 | 60 | 37 | 336 | 66 | 47 | 2.2% | 36.00 [8.99, 63.01] | |
| ncent 2009 | 388.8 | 92.4 | 59 | 366 | 96.6 | 59 | 1.6% | 22.80 [-11.31, 56.91] | |
| ibtotal (95% CI) | | | 468 | | | 592 | 21.0% | 20.69 [12.47, 28.91] | ♦ |
| eterogeneity: Tau² = 0.00; Chi² = 4.96, df = 10 (P = 0.8 st for overall effect: Z = 4.93 (P < 0.00001) | 9); I² = 0% | | | | | | | | |
| 1.4 Self-help delivery | 000 | 00 | 4.5 | 0.40 | 70 | 4- | 0.00 | 40.00144.40.407.407 | |
| urrie 2004 (self-help) | 390 | 96 | 15 | 342 | 72 | 17 | | 48.00 [-11.43, 107.43] | |
| 0 2014 rnolou 2013 | 387.56 | | 103 | | 88.72 | 104 | 2.5% | 1.76 [-22.38, 25.90] | |
| rnelov 2012 | 373.2 | 61.2 | 38 | 393 | 75.6 | 36 | 1.8% | -19.80 [-51.24, 11.64] | - |
| ncee 2012 (self-help) | 391.48 | 61 | | 366.02 | 59.5 | 160 | 4.3% | 25.46 [11.73, 39.19] | |
| orin 2005 | 443.32 | | 96 | 438.95 | | 96 | 3.3% | 4.37 [-14.55, 23.29] | + |
| n Straten 2009 | 359.9 | 74.7 | 126 | 371 | 68.6 | 121 | 3.5% | -11.10 [-28.98, 6.78] | |
| ibtotal (95% CI) sterogeneity: Tau² = 260.07; Chi² = 15.73, df = 5 (P = 1 st for overall effect: Z = 0.58 (P = 0.56) | 0.008); I²= | 68% | 516 | | | 534 | 15.9% | 4.87 [-11.59, 21.32] | T |
| 1.5 Telephone delivery | | | | | | | | | |
| nedt 2013 | 406.8 | 67 | 15 | 391.7 | 57.6 | 15 | 1.0% | 15.10 [-29.61, 59.81] | |
| ubtotal (95% CI) | | | 15 | | | 15 | 1.0% | 15.10 [-29.61, 59.81] | - |
| eterogeneity: Not applicable est for overall effect: Z = 0.66 (P = 0.51) | | | | | | | | - , | |
| 1.6 Video delivery | | | | | | | | | |
| /barczyk 2005-video (Behavioral Sleep Medicine) | 371.5 | 48 | 12 | 378.4 | 56.8 | 13 | 1.2% | -6.90 [-48.02, 34.22] | |
| avard 2014 (Video) | 435.28 | | | 425.94 | | 77 | 2.9% | 9.34 [-12.30, 30.98] | |
| | -55.20 | 55.51 | 66 | 123.34 | . 2.50 | 90 | 4.0% | 5.82 [-13.33, 24.97] | • |
| ibtotal (95% CI) |): 2 = 0.04 | | | | | | | | T |
| | 7.1 - 0.70 | | | | | | | | |
| eterogeneity: Tau² = 0.00; Chi² = 0.47, df = 1 (P = 0.49 | | | | | | | | | |
| ubtotal (95% CI) eterogeneity: Tau² = 0.00; Chi² = 0.47, df = 1 (P = 0.49 est for overall effect: Z = 0.60 (P = 0.55) | | | | | | | | | |
| eterogeneity: Tau² = 0.00; Chi² = 0.47, df = 1 (P = 0.49 | | | 2150 | | | 2106 | 100.0% | 9.89 [4.96, 14.83] | • |
| eterogeneity: Tau² = 0.00; Chi² = 0.47, df = 1 (P = 0.49 est for overall effect: Z = 0.60 (P = 0.55) | | 36% | 2150 | | | 2106 | 100.0% | 9.89 [4.96, 14.83] | -200 -100 0 100 |

*Currie 2004 (in-person and self-help) uses same control data
Edinger 2005 (usual and sleep hygiene) pooled control data, converted SE to SD
Lancee 2012 (internet and self-help) uses same control data

Lancee 2016 (in-person and internet) uses same control data
Savard 2014 (in-person and video) uses same control data
Espie 2012 (imagery and usual care) pooled control data, converted SE to SD
Taylor 2017 (in-person and internet) uses same control data, converted SE to SD

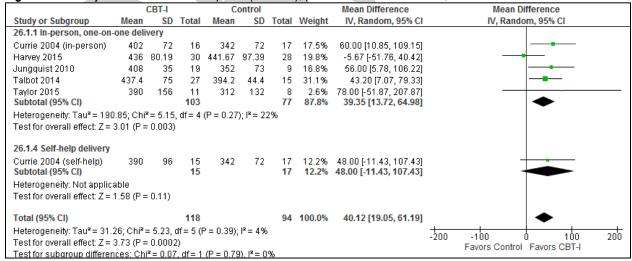
Total sleep time (Diary): Insomnia and no comorbidities

Figure S62. Diary-determined total sleep time(minutes), post treatment differences, CBT-I vs. control



Total sleep time (Diary): Insomnia and comorbid psychiatric conditions

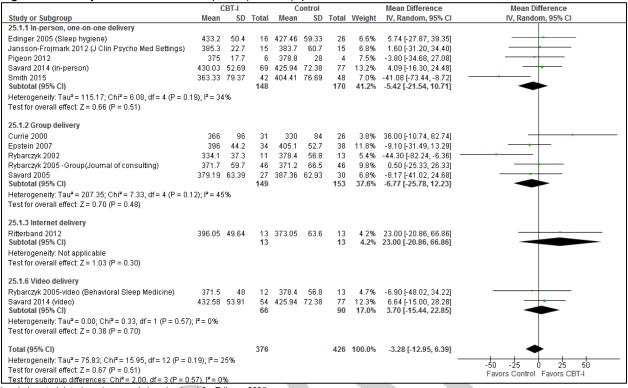
Figure S63. Diary-determined total sleep time(minutes), post treatment differences, CBT-I vs. control



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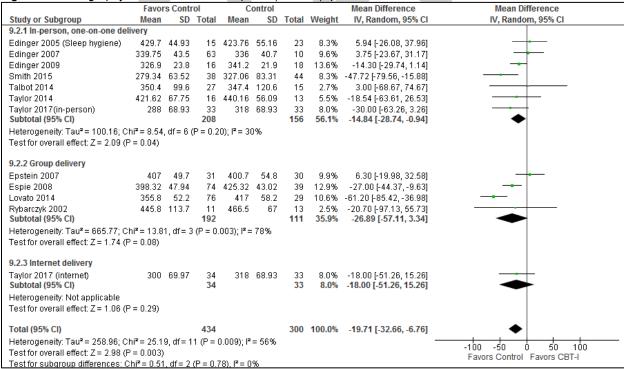
Total sleep time (Diary): Insomnia and comorbid medical conditions

Figure S64. Diary-determined total sleep time(minutes), post treatment differences, CBT-I vs. control



^{*}pooled control data (usual care and sleep hygiene) for Edinger 2005

Figure S65. Actigraphy-determined total sleep time(minutes), post treatment differences, CBT-I vs. control

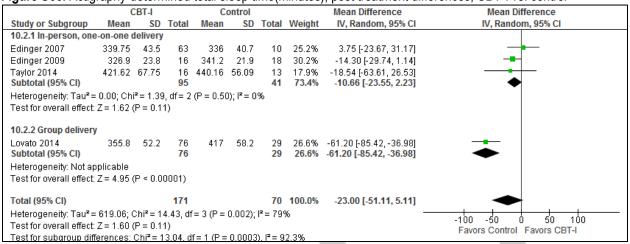


^{*}Edinger 2005 (usual and sleep hygiene) pooled control data, converted SE to SD

Taylor 2017 (in-person and internet) uses same control data, converted SE to SD

Total sleep time (Act): Insomnia and no comorbidities

Figure S66. Actigraphy-determined total sleep time(minutes), post treatment differences, CBT-I vs. control



Total sleep time (Act): Insomnia and comorbid psychiatric conditions

Table S32. Actigraphy-determined total sleep time(minutes), post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | | Control | Mean Difference, [95% CI] | |
|-------------|--------------------------|-------|------|-------|-------|---------|---------------------------|----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Talbot 2014 | In-person, one-on-one | 350.4 | 99.6 | 27 | 347.4 | 120.6 | 15 | 3.00[-68.67, 74.67] |

Total sleep time (Act): Insomnia and comorbid medical conditions

Figure S67. Actigraphy-determined total sleep time(minutes), post treatment differences, CBT-I vs. control

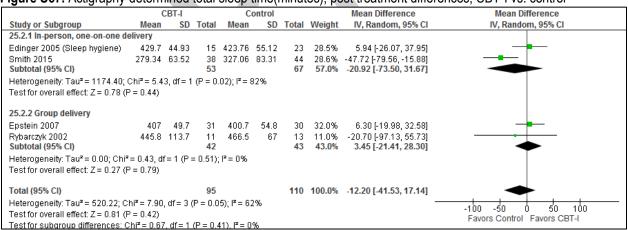
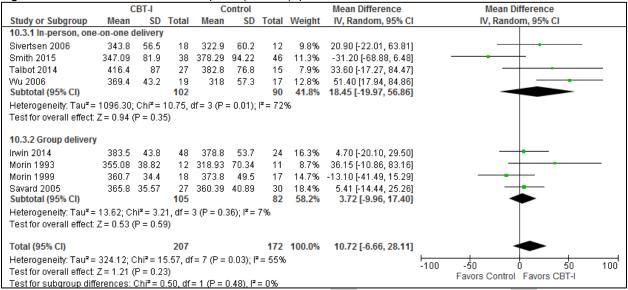
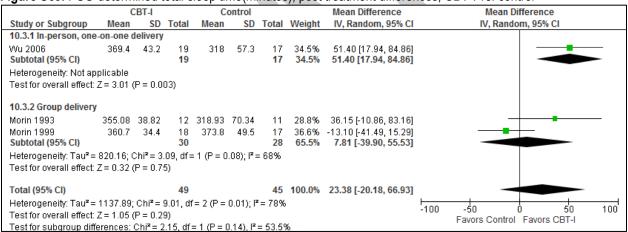


Figure S68. PSG-determined total sleep time(minutes), post treatment differences, CBT-I vs. control



Total sleep time (PSG): Insomnia and no comorbidities

Figure S69. PSG-determined total sleep time(minutes), post treatment differences, CBT-I vs. control



Total sleep time (PSG): Insomnia and comorbid psychiatric conditions

Table S33, PSG-determined total sleep time(minutes), post treatment differences, CBT-I vs. control

| Study | Delivery | CBT-I | | | Control | | | Mean Difference, [95% CI] |
|-------------|--------------------------|-------|----|-------|---------|------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Talbot 2014 | In-person, one-on-one | 416.4 | 87 | 27 | 382.8 | 76.8 | 15 | 33.60 [-17.27, 84.47] |

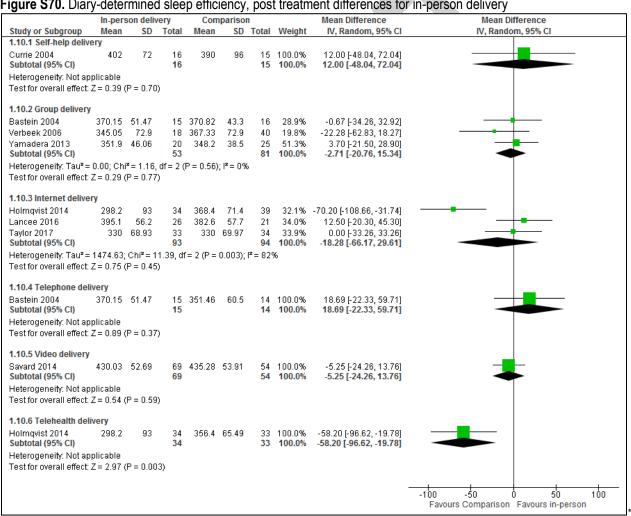
Total sleep time: Insomnia and comorbid medical conditions (PSG)

Table S34, PSG-determined total sleep time(minutes), post treatment differences, CBT-I vs. control

| Study | Delivery | | CBT-I Control | | | | Mean Difference, [95% CI] | |
|-------------|--------------------------|--------|---------------|-------|--------|-------|---------------------------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Smith 2015 | In-person, one-on-one | 347.09 | 81.9 | 38 | 378.29 | 94.22 | 46 | -31.20 [-68.88, 6.48] |
| Savard 2005 | Group delivery | 360.38 | 50.14 | 27 | 367.99 | 44.58 | 30 | -7.61[-32.35.17.13] |

Total sleep time (Diary): In-person delivery vs. comparison:

Figure \$70. Diary-determined sleep efficiency, post treatment differences for in-person delivery



subgroup of delivery method is reported separately in the results section

each

Table S35 - Summary of Findings table for CBT-I for the treatment of Psychological and Behavioral insomnia in adults

References: Currie 2004 (A); Jansson-Frojmark 2012 (B); Lancee 2016 (C); Taylor 2014 (D); Epstein 2007 (E); Espie 2012 (F); Lancee 2015 (G) Strom 2004 (H); Vincent 2009 (I); Arnedt 2013 (J); Ho 2014 (K); Jernelov 2012 (L); Van Straten 2009 (M); Edinger 2005 (N)); Edinger 2007 (O); Edinger 2009 (P); Ellis 2015 (Q); Harvey 2015 (R); Jacobs 2004 (S); Jungquist 2010 (T); Savard 2014 (U); Smith 2015 (V); Talbot 2014 (W); Kaku 2011 (X), Taylor 2015 (Y); Wu 2006 (Z); Bothelius 2013 (AA); Currie 2000 (BB); Espie 2007 (CC); Espie 2008 (DD); Irwin 2014 (EE);); Lovato 2014 (FF); Morin 1993 (GG); Rybarczyk 2002 (HH); Rybarczyk, JCC 2005 (II); Savard 2005 (JJ); Lancee 2012 (KK); Ritterband 2009 (LL); Ritterband 2012 (MM); Van Straten 2014 (NN); Rybarczyk, BSM 2005 (OO); Morin 1999 (PP); Wagley 2013 (QQ); Fleming 2014 (RR); Bjorvatn 2011 (SS); Pigeon 2012 (UU); Dirksen 2007 (VV); Martinez 2014 (WW); Thorndike 2013 (XX); Blom 2016 (ZZ); Thiart 2015 (AAA); Miro 2011 (BBB); Sivertsen 2006 (CCC); Taylor 2017 (DDD); Drake 2019 (EEE); Sandlund 2017 (FFF), Espie 2019 (GGG); Bjorvatn 2018 (HHH); Mao 2017 (III); Bernstein 2017 (JJJ); Morin 2005 (KKK); Alessi 2016 (LLL); Horsch 2017 (MMM)

| Outcomes | Quality of the | Absolute Difference | No of Participants |
|--|------------------------|---|--|
| [Tool] | evidence | | (studies) |
| | (GRADE) | CBTI vs Control | |
| Quality of sleep * [Diary] | ⊕⊕⊜⊝ LOW a,c | The standardized mean difference in the CBTI group was 0.46 points higher² [0.29 to 0.63 points higher] compared to control | 1936 patients (18 RCT) A-M,DDD-FFF,KKK,MMM |
| Quality of sleep [PSQI] | ⊕⊕⊕⊝ MODERATE ° | The standardized mean difference in the CBTI group was 0.66 points lower¹ [0.54 to 0.78 points lower] compared to control | 1839 patients (21 RCTs) AD,E,J,K,P,R,X,BB,HH, II,NN,OO,QQ,SS,WW,BBB ,III,KKK,LLL,MMM |
| Sleep latency * [Diary] | ⊕⊕⊕⊜ MODERATE ° | The mean difference in the CBTI group was 12.33 minutes lower ² [10.12 min to 14.54 mins lower] compared to control | 4100 patients (45 RCTs) A.C-W.Y.Z.AANN, OO.DDD.EEE,FFF,KKK,LLL,MMM |
| Sleep latency [PSG] | ⊕⊕⊕⊜ MODERATE ° | The mean difference in the CBTI group was 4.7 minutes lower ² [14.67 min lower to 5.27 mins higher] compared to control | 275 patients (5 RCTs) V.Z.EE,GG,JJ |
| Wake after sleep onset * [Diary] | ⊕⊕⊜⊝ LOW a,c | The mean difference in the CBTI group was 19.13 minutes lower ² [15.40 to 22.86 minutes lower] compared to control | 3561 patients (42 RCT) A.C.D.E.F.G.H.I.J.K.L.N.O.P.Q.R.T.U.V.W.Y.AA.BB.CC.DD.EE, FF.GG.HH.JI.JJ.KK.LL.MM,OO.PP.EEE.FFF.KKK,LLL.MMM |
| Wake after sleep onset [Act] | ⊕⊕⊕⊜ MODERATE ° | The mean difference in the CBTI group was 3.34 minutes lower ² [8.46 mins lower to 1.77 min higher] compared to control | 749 patients (10 RCT) D.E.N.P,V,W,CC,DD,FF,DDD |
| Wake after sleep onset [PSG] | LOW a,c | The mean difference in the CBTI group was 14.68 minutes lower ² [30.29 min lower to 0.92 mins higher] compared to control | 316 patients (6 RCT) V.W.EE.GG,JJ,PP |
| Remission rate* [ISI, Diary] | ⊕⊕⊕⊜ MODERATE ° | The percentage of patients achieving "remission" in the CBTI group was 33% higher¹ [28% to 39% higher] compared to control | 1775 patients (25 RCT) A. B.D.J.L.P.R.S.U.V.W.Z.BB.CC,EE,FF,JJ.LL,MM,PP,QQ,RR,EEE,FFF,MMM |
| Responder rate* [ISI, Diary] | ⊕⊕⊕⊜ MODERATE ° | The percentage of patients considered "responders" in the CBTI group was 44% higher¹ [39% to 51% higher] compared to control | 1009 patients (16 RCT) B.C.F.G.J.L.N.O.R.AA, HH.II.OO.PP.FFF,MMM |
| Beliefs and attitudes about sleep [DBAS] | ⊕⊕⊕⊜ VERY LOW a,b,c | The standardized mean difference in the CBTI group was 0.78 points lower¹ [0.31 to 1.26 points lower] compared to control | 1362 patients (14 RCT) D.H.I.J.L.M.U.HH.II.OO,SS.DDD,III. MMM |
| Daytime fatigue [MFI, FFS] | ⊕⊕⊜⊝ LOW a,c | The standardized mean difference in the CBTI group was 0.56 points lower¹ [0.25 to 0.87 points lower] compared to control | 2250 patients (10 RCT) D.I.J.FF,MM,UU,VV, WW,XX, GGG |
| Insomnia severity [ISI] | ⊕⊕⊕⊖ MODERATE ° | The standardized mean difference in the CBTI group was 0.94 points lower¹ [0.76 to 1.12 points lower] compared to control | 2430 patients (27 RCT)B.C.D.I.J.K.L.R.T.U.Y.W.Y.AA.FF,JJ.LL,UU.VV.ZZ.AAA.DDD.EEE.FFF,HHH,JJJ.KKK, LLL,MMM |
| Insomnia severity [ISQ] | ⊕⊕⊜⊝ LOW a,c | The standardized mean difference in the CBTI group was 0.32 points lower ² [0.73 points lower to 0.09 points higher] compared to control | 200 patients (3 RCT) N,O,P |
| Nights using hypnotics [Diary] | ⊕⊕⊕⊜ MODERATE ° | The mean difference in the CBTI group was 1.14 nights per week lower ² [0.66 to 1.63 nights per week lower] compared to control | 858 patients (5 RCT) M.HH,KK,OO,SS |
| Number of nighttime awakenings [Diary] | ⊕⊕⊕⊜ MODERATE ° | The mean difference in the CBTI group was 0.36 points lower ² [0.24 to 0.48 points lower] compared to control | 1683 patients (19 RCT) A.C.D.G.H.I.J.Q.T.BB,FF, KK,LL,MM,NN,DDD,EEE,FFF,MMM |
| Number of nighttime awakenings [Act] | ⊕⊕⊜⊝ LOW a,c | The mean difference in the CBTI group was 0.33 points lower ² [0.19 to 0.48 points lower] compared to control | 100 patients (1 RCT) ^{DDD} |

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| Sleep efficiency [Diary] | ⊕⊕⊕⊜ MODERATE ° | The mean difference in the CBTI group was 7.19% higher ² [6.10% to 8.28% higher] compared to control | 4234 patients (48 RCTs) ACD,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,Y,Z,BB,CC, DD,EE,FF,GG,HH,II,J,J,KK,LL,MM,NN,OO,PP,UU,AAA,CCC,DDD,EEE,FFF,KKK,LLL,MMM |
|-----------------------------|--------------------|--|---|
| Sleep efficiency | ⊕⊕⊕⊜ | The mean difference in the CBTI group was 0.95% higher² [0.27% lower to 2.17% higher] compared to control | 847patients |
| [Actigraphy] | MODERATE ∘ | | (10 RCTs) E.N.O.P.V.CC, DD.HH.DDD.LLL |
| Sleep efficiency | ⊕⊕⊕⊜ | The mean difference in the CBTI group was $4.64\%\ higher^2$ [1.88% to 7.40% higher] compared to control | 337 patients |
| [PSG] | MODERATE ° | | (7 RCTs) V.Z.EE,GG,JJ,PP,CCC |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 39.60 minutes lower¹ [26.07 to 53.12 minutes lower] compared to control | 1231 patients |
| [Diary] | L OW a,c | | (15 RCTs) B.C.D.F.H.N.O.R.U. GG.JJ.UU.CCC.KKK.LLL |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 6.08 minutes lower² [16.42 minutes lower to 4.25 minutes higher] compared to control | 134 patients |
| [Act] | LOW a.c | | (3 RCTs) D.M.O |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 36.98 minutes lower¹ [79.33 minutes lower to 5.37 minutes higher] compared to control | 110 patients |
| [PSG] | LOW ª.c | | (3 RCTs) ^{GG. பூ.ccc} |
| Total sleep time [Diary] | ⊕⊕⊕⊜ MODERATE ° | The mean difference in the CBTI group was 9.89 minutes higher ² [4.96 minutes to 14.83 minutes higher] compared to control | 3788 patients (47 RCTs) AB,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,Y,Z,BB,CC,DD,EE,FF,GG,HH, II,J,KK,LL,MM,NN,OO,PP,UU,CCC,DDD,EEE,FFF,MMM |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 19.71 minutes lower ² [6.76 minutes to 32.66 minutes lower] compared to control | 741 patients |
| [Actigraphy] | LOW a.c | | (11 RCTs) D.E.N.O.P.V.W.DD.FF, HH.DDD |
| Total sleep time | ⊕⊜⊜ | The mean difference in the CBTI group was 10.72 minutes higher ² [6.66 minutes lower to 28.11 minutes higher] compared to control | 379 patients |
| [PSG] | VERY LOW a.b.c | | (8 RCTs) v.w.z.ee,gg,JJ,PP, CCC |

^{*} Critical Outcome

Table S36 - Summary of Findings table for CBT-I for the treatment of Psychological and Behavioral insomnia in adults with Insomnia and no comorbidities

References: Edinger 2001 (A); Soeffing 2008(B); Taylor 2014 (C); Edinger 2009 (D); Edinger 2007 (E); Jacobs 2004 (F); Wu 2006 (G); Lovato 2014 (H); Morin 1993 (I); Ritterband 2009 (J); Morin 1999 (K); Strom 2004 (L); Blom 2016 (M)

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) | |
|--------------------------|-------------------------|--|------------------------------|--|
| | (GRADE) | CBTI vs Control | | |
| Quality of sleep * | ⊕○○○ | The standardized mean difference in the CBTI group was 0.77 points higher [0.52 points lower to 2.07 points higher] compared to control ¹ | 110 patients | |
| [Diary] | VERY LOW a,b,c | | (2 RCT) ^{C,L} | |
| Quality of sleep * | ⊕⊕⊜⊝ | The standardized mean difference in the CBTI group was 1.08 points lower [2.17 points lower to 0.02 points higher] compared to control ¹ | 63 patients | |
| [PSQI] | LOW a,b,c | | (2 RCT) ^{C,D} | |
| Sleep latency * | ⊕⊕⊕⊜ | The mean difference in the CBTI group was 10.64 minutes lower [5.99 min to 15.28 mins lower] compared to control ² | 454 patients | |
| [Diary] | MODERATE ° | | (9 RCTs) C,D,E,F,G,H,I,J,L | |
| Sleep latency PSG] | ⊕⊕⊜⊝ LOW a,c | The mean difference in the CBTI group was 17.11 minutes lower [43.65 min lower to 9.43 mins higher] compared to control ² | 58 patients (2 RCTs) G,I | |
| Nake after sleep onset * | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 24.10 minutes lower [9.30 to 38.90 minutes lower] compared to control ¹ | 421 patients | |
| Diary] | L OW a,c | | (8 RCTs) C,D,E,H,I,J,K,L | |
| Wake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 5.41 minutes lower [14.16 mins lower to 3.33 min higher] compared to control ² | 181 patients | |
| [Act] | LOW a,b,c | | (3 RCT) ^{C,D,H} | |
| Wake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 24.51 minutes lower [7.51 min lower to 41.52 mins higher] compared to control ¹ | 58 patients | |
| [PSG] | LOW a,c | | (2 RCT) ^{I,K} | |
| Remission rate* | ⊕⊕⊕⊜ | The percentage of patients achieving "remission" in the CBTI group was 47% higher [33% to 61% higher] compared to control ¹ | 278 patients | |
| [ISI, Diary] | MODERATE ° | | (6 RCT) C,D,F,G,H,J | |

a. 95% CI crosses clinical significance threshold and/or <200 participants

b. Inconsistent subgroup differences

c. Risk of bias [no patient blinding, allocation concealment]

¹ Meets the clinical significance threshold ² Does not meet the clinical significance threshold

| Responder rate* | ⊕⊕⊕⊜ | The percentage of patients considered "responders" in the CBTI group was 55% higher [10% to 99% higher] compared to control1 | 54 patients | |
|--------------------------------|-------------------------------|---|--|--|
| [ISI, Diary] | MODERATE ^a | | (2 RCT) D,K | |
| Cognitive function [DBAS] | ⊕⊕⊜⊝ L OW a,b,c | The mean difference in the CBTI group was 1.34 points lower [0.06 to 2.62 points lower] compared to control ¹ | 109 patients (2 RCT) ^{C,L} | |
| Daytime fatigue | ⊕⊕⊜⊝ | The std mean difference in the CBTI group was 0.7 points lower [0.32 to 1.08 points lower] compared to control ¹ | 134 patients | |
| [MFI, FFS] | L OW a,c | | (2 RCT) ^{C,H} | |
| Insomnia severity [ISI] | ⊕⊕⊜⊝ LOW b,c | The mean difference in the CBTI group was 1.13 points lower [0.66 to 1.60 points lower] compared to control ¹ | 267 patients (3 RCT) ^{C,H,M} | |
| Insomnia severity [ISQ] | ⊕⊕⊕⊜ MODERATE ^a | The mean difference in the CBTI group was 0.45 points lower [1.13 points lower to 0.23 points higher] compared to control ² | 258 patients (2 RCT) D.E | |
| Nights using hypnotics | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 0.2 nights per week higher [2.33 nights lower to 2.73 nights per week higher] compared to control ² | 24 patients | |
| [Diary] | L OW a,b,c | | (1 RCT) ¹ | |
| Number of nighttime awakenings | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 0.31 points lower [0.07 to 0.55 points lower] compared to control ² | 259 patients | |
| [Diary] | LOW a,c | | (4 RCTs) ^{C,H,J,L} | |
| Sleep efficiency | ⊕⊕⊜⊜ | The mean difference in the CBTI group was 8.19% higher [5.63 % to 10.74% higher] compared to control ² | 527 patients | |
| [Diary] | LOW a,c | | (10 RCTs) ^{C-L} | |
| Sleep efficiency | ⊕⊕⊕⊜ | The mean difference in the CBTI group was 0.16% lower [3.25% lower to 2.94% higher] compared to control ² | 139 patients | |
| [Actigraphy] | MODERATE ^a | | (2 RCTs) D.E | |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 6.27% higher [2.64% to 9.9% higher] compared to control ² | 94 patients | |
| [PSG] | LOW a,c | | (3 RCTs) ^{G,I,K} | |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 17.49 minutes lower [2.87 to 32.1 minutes lower] compared to control ² | 207 patients | |
| [Diary] | LOW a,b,c | | (4 RCTs) ^{C,E,I,L} | |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 2.49 minutes lower [10.58 minutes lower to 5.61 minutes higher] compared to control ² | 96 patients | |
| [Act] | LOW a,b,c | | (2 RCTs) ^{C,E} | |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 37.92 minutes lower [6.57 minutes to 69.27 minutes lower] compared to control ¹ | 23 patients | |
| [PSG] | LOW a,c | | (1 RCT) ¹ | |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 9 minutes higher [0.02 minutes lower to 18.02 minutes higher] compared to control ² | 492 patients | |
| [Diary] | LOW a,c | | (10 RCTs) ^{C-L} | |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 23 minutes lower [51.11 minutes lower to 5.11 minutes higher] compared to control ² | 241 patients | |
| [Actigraphy] | LOW a,b,c | | (4 RCTs) ^{C,D,E,H} | |
| Total sleep time [PSG] | ⊕⊕⊜⊝ LOW a,b,c | The mean difference in the CBTI group was 23.28 minutes higher [20.18 minutes 94 patients lower to 66.93 minutes higher] compared to control ¹ (3 RCTs) ^{G,I} | | |

Table S37 - Summary of Findings table for CBT-I for the treatment of Psychological and Behavioral insomnia in adults with Insomnia and psychiatric comorbidities

References: Currie 2004 (A); Freeman 2015 (B); Harvey 2015 (C); Wagley 2013 (D); Rybarczyk 2002 (E); Rybarczyk 2005 (JCC) (F); Rybarczyk 2005 (BSM (G); Jungquist 2010 (H); Talbot 2014 (I); Taylor 2015 (J); Jansson-Frojmark 2012 (K); Thorndike 2013 (L)

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) |
|--------------------------|-------------------------|--|------------------------------|
| | (GRADE) | CBTI vs Control | |
| Quality of sleep * | ⊕⊕⊜⊝ | The standardized mean difference in the CBTI group was 0.82 points higher [0.15 points to 1.48 points higher] compared to control ¹ | 47 patients |
| [Diary] | LOW a,c | | (1 RCT) ^A |
| Quality of sleep | ⊕⊕⊕⊜ | The standardized mean difference in the CBTI group was 0.78 points lower [0.55 points to 1 point lower] compared to control ¹ | 316 patients |
| [PSQI] | MODERATE ∘ | | (7 RCT) ^{A-G} |
| Sleep latency * | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 23.02 minutes lower [15.20 min to 30.84 mins lower] compared to control ¹ | 339 patients |
| [Diary] | L OW a,c | | (8 RCTs) A,C,E,F,G,H,I,J |
| Wake after sleep onset * | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 24.57 minutes lower [10.63 to 38.50 minutes lower] compared to control ¹ | 339 patients |
| [Diary] | L OW a,c | | (8 RCTs) A,C,E,F,G,H,I,J |

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^{*} Critical Outcome
a 95% CI crosses clinical significance threshold and/or <200 participants

b. Inconsistent subgroup differences or overall inconsistency c. Risk of bias [no patient blinding, allocation concealment]

¹ Meets the clinical significance threshold ² Does not meet the clinical significance threshold

| Wake after sleep onset [Act] | ⊕⊕⊕⊜ MODERATE ^a | The mean difference in the CBTI group was 13.96 minutes lower [57.28 mins lower to 20.52 min higher] compared to control ² | 45 patients (1 RCT) ¹ |
|--------------------------------|-------------------------------|---|--|
| Wake after sleep onset [PSG] | ⊕⊕⊕⊝ MODERATE ^a | The mean difference in the CBTI group was 18.38 minutes lower [60.15 mins lower to 32.23 min higher] compared to control ² | , |
| Remission rate* | ⊕⊕⊜⊝ | The percentage of patients achieving "remission" in the CBTI group was 31% higher [13% to 48% higher] compared to control ¹ | 196 patients |
| [ISI, Diary] | LOW a,c | | (5 RCT) A,CD,H,I |
| Responder rate* | ⊕⊕⊜⊝ | The percentage of patients considered "responders" in the CBTI group was 50% higher [38% to 62% higher] compared to control1 | 188 patients |
| [ISI, Diary] | LOW a,c | | (4RCT) ^{C,E,F,G} |
| Cognitive function | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 0.9 points lower [0.53 to 1.28 points lower] compared to control ¹ | 123 patients |
| [DBAS] | LOW a,c | | (3 RCT) E,F,G |
| Daytime fatigue | ⊕⊕⊜⊝ | The std mean difference in the CBTI group was 0.81 points lower [0.19 to 1.42 points lower] compared to control ¹ | 44 patients |
| [MFI, FFS] | LOW a,c | | (1 RCT) ^L |
| Insomnia severity [ISI] | ⊕⊕⊕⊜ MODERATE ^a | The mean difference in the CBTI group was 1.61 points lower [1.16 to 2.05 points lower] compared to control ¹ | 147 patients (4 RCT) ^{C,H,I,J} |
| Nights using hypnotics | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 1.5 nights per week lower [3.53 nights lower to 0.53 nights per week higher] compared to control ² | 25 patients |
| [Diary] | L OW a,b | | (1 RCT) ^G |
| Number of nighttime awakenings | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 0.54 points lower 1.25 points lower to 0.59 points higher] compared to control ¹ | 93 patients |
| [Diary] | L OW a,c | | (2 RCTs) A,H |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 9.52% higher [7.05 % to 11.99% higher] compared to control ² | 353 patients |
| [Diary] | LOW a,c | | (7 RCTs) A,C,E,F,G,H,I,J |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 0.80% lower [10.15% lower to 8.55% higher] compared to control ² | 24 patients |
| [Actigraphy] | LOW a,c | | (1 RCT) ^E |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 25.94 minutes lower [53.98 mins lower to 2.10 minutes higher] compared to control ² | 58 patients |
| [Diary] | LOW a | | (1 RCTs) ^c |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 17.69 minutes higher [5.66 minutes lower to 41.04 minutes higher] compared to control ² | 371 patients |
| [Diary] | L OW a,b,c | | (9 RCTs) A-C,E,F,G,H,I,J |
| Total sleep time | ⊕⊕⊕⊜ | The mean difference in the CBTI group was 27.47 minutes lower [69.89 minutes lower to 14.94 minutes higher] compared to control ² | 103 patients |
| [Actigraphy] | MODERATE ^a | | (3 RCTs) B,E,I |
| Total sleep time | ⊕⊕⊕⊜ | The mean difference in the CBTI group was 33.60 minutes higher [17.27 minutes lower to 84.47 minutes higher] compared to control ¹ | 42 patients |
| [PSG] | MODERATE ^a | | (1 RCTs) ¹ |
| | | <u> </u> | |

^{*} Critical Outcome

Table S38 - Summary of Findings table for CBT-I for the treatment of Psychological and Behavioral insomnia in adults with Insomnia and medical comorbidities

References: Epstein 2007 (A); Jansson-Frojmark 2012 (B); Edinger 2005 (C); Savard 2014 (D); Ritterband 2012 (E); Currie 2000 (F); Savard 2005 (G); Smith 2015 (H); Martinez 2014 (I); Miro 2011 (J); Hou 2014 (K); Pigeon 2012 (L); Dirksen 2007 (M); Chen 2008 (N); Mathews 2014 (O);

| Outcomes [Tool] | Quality of the evidence (GRADE) | Absolute Difference CBTI vs Control | No of Participants (studies) | |
|--------------------|---------------------------------|--|------------------------------|--|
| Quality of sleep * | ⊕⊕⊜⊝ | The standardized mean difference in the CBTI group was 0.15 points higher [1.27 points lower to 1.57 points higher] compared to control ² | 102 patients | |
| [Diary] | LOW a,b,c | | (2 RCT) A,B | |
| Quality of sleep | ⊕⊕⊕⊜ | The standardized mean difference in the CBTI group was 0.88 points lower [0.61 points to 1.14 points lower] compared to control ¹ | 243 patients | |
| PSQI] | MODERATE : | | (4 RCT) ^{G,J,K,L} | |
| Sleep latency * | ⊕⊕⊕⊜ | The mean difference in the CBTI group was 8.46 minutes lower [1.97 min to 14.96 mins lower] compared to control ² | 220 patients | |
| Diary] | MODERATE ° | | (6 RCTs) A,C,D,E,F,G,H | |
| Sleep latency | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 3.11 minutes higher [2.83 min lower to 9.05 mins higher] compared to control 2 | 126 patients | |
| [PSG] | L OW a,c | | (2 RCTs) H,I | |

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a 95% CI crosses clinical significance threshold and/or <200 participants

^{b.} Inconsistent subgroup differences or overall inconsistency

^{c.} Risk of bias [no patient blinding, allocation concealment]

¹ Meets the clinical significance threshold

² Does not meet the clinical significance threshold

| Wake after sleep onset * [Diary] | ⊕⊕⊜⊝ L OW a,c | The mean difference in the CBTI group was 15.79 minutes lower [8.16 to 23.43 minutes lower] compared to control ² | 543 patients (7 RCTs) A,C,D,E,F,G,H,I |
|----------------------------------|---------------------------|---|--|
| Wake after sleep onset [Act] | ⊕⊕⊖⊖ LOW a,b,c | | 184 patients (3 RCT) ^{C,D,I} |
| Wake after sleep onset [PSG] | ⊕⊕⊜⊝ L OW a,b,c | The mean difference in the CBTI group was 14.18 minutes lower [57.47mins lower to 29.11 mins higher] compared to control ² | 141 patients (2 RCT) H,I |
| Remission rate* | ⊕⊕⊕⊝ | The percentage of patients achieving "remission" in the CBTI group was 30% higher [23% to 38% higher] compared to control1 | 465 patients |
| [ISI, Diary] | MODERATE ° | | (6 RCT) B,E,F,G,H,I |
| Responder rate* | ⊕⊕⊜⊝ | The percentage of patients considered "responders" in the CBTI group was 59% higher [43% to 75% higher] compared to control ¹ | 66 patients |
| [ISI, Diary] | LOW a,c | | (2 RCT) B,C |
| Cognitive function | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 1.56 points lower [0.59 to 2.53 points lower] compared to control ¹ | 201 patients |
| [DBAS] | L OW a,c | | (1 RCT) ^E |
| Daytime fatigue | ⊕⊕⊕⊜ | The std mean difference in the CBTI group was 0.53 points lower [0.22 to 0.84 points lower] compared to control ¹ | 167 patients |
| [MFI, FSS] | MODERATE ∘ | | (4 RCT) F,J,M,N |
| Insomnia severity [S] | ⊕⊕⊜⊝ L OW a,c | The mean difference in the CBTI group was 0.78 points lower [0.43 to 1.12 points lower] compared to control ¹ | 401 patients (5 RCT) B,E,I,M,N |
| Insomnia severity [ISQ] | ⊕⊕⊜⊝ L OW a,b,c | The mean difference in the CBTI group was 0.31 points lower [1.74 points lower to 1.11 points higher] compared to control ² | 42 patients (1 RCT) ^c |
| Number of awakenings | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 0.11 points lower [0.7 to 0.92 points lower] compared to control ² | 83 patients |
| [Diary] | L OW a,b | | (2 RCTs) G,Q |
| Sleep efficiency | ⊕⊕⊕⊜ | The mean difference in the CBTI group was 5.87% higher [3.46 % to 8.29% higher] compared to control ² | 543 patients |
| [Diary] | MODERATE ° | | (8 RCTs) A,C,D,E,F,G,H,L |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 3.11% higher [1.05% to 5.18% higher] compared to control ² | 186 patients |
| [Actigraphy] | L OW a,c | | (3 RCTs) A,C,H |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 2.1% higher [1.14% lower to 5.35% higher] compared to control ² | 141 patients |
| [PSG] | L OW a,c | | (2 RCTs) ^{G,H} |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 37.64 minutes lower [19.71 to 55.58 minutes lower] compared to control ¹ | 351 patients |
| [Diary] | L OW a,b,c | | (5 RCTs) B,C,D,G,L |
| Total wake time [Act] | ⊕⊕⊜⊝ LOW a,c | The mean difference in the CBTI group was 16.96 minutes lower [1.22 minutes to 32.71 minutes lower] compared to control ² | 38 patients (1 RCTs) ^c |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 1.37 minutes lower [23.05 minutes to 20.31 minutes higher] compared to control ² | 57 patients |
| [PSG] | LOW a.c | | (1 RCT) ^G |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 0.7 minutes lower [10.28 minutes lower to 8.87 minutes higher] compared to control ² | 583 patients |
| [Diary] | LOW a,c | | (9 RCTs) A-H,L |
| Total sleep time [Actigraphy] | LOW a,c | The mean difference in the CBTI group was 8.76 minutes lower [37.36 minutes lower to 19.83 minutes higher] compared to control ² | 184 patients (3 RCTs) A,C,H |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the CBTI group was 14.95 minutes lower [36.36 minutes lower to 6.46 minutes higher] compared to control ² | 141 patients |
| [PSG] | LOW a,c | | (2 RCTs) ^{G,H} |
| * Critical Outcome | | | |

^{*} Critical Outcome

a 95% CI crosses clinical significance threshold and/or <200 participants

b Inconsistent subgroup differences or overall inconsistency

c Risk of bias [no patient blinding, allocation concealment]

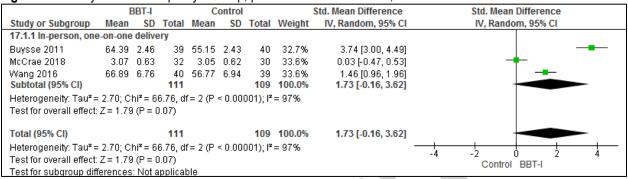
1 Meets the clinical significance threshold

2 Does not meet the clinical significance threshold

Brief Behavioral Therapies (BBT)

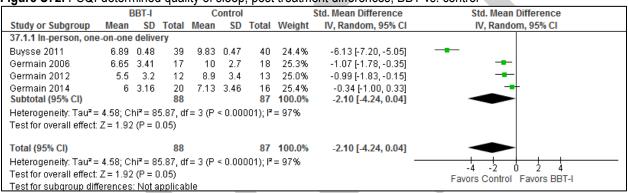
Quality of sleep: Diary

Figure S71. Dairy-determined quality of sleep, post treatment differences, BBT vs. control



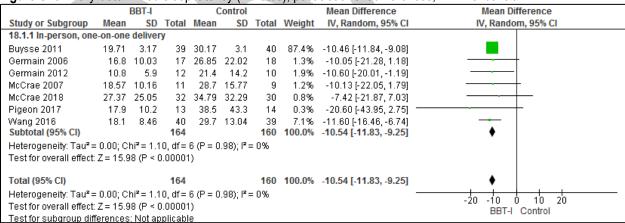
Quality of sleep: PSQI

Figure S72. PSQI-determined quality of sleep, post treatment differences, BBT vs. control



Sleep latency: Diary

Figure S73. Diary-determined sleep latency (minutes), post treatment differences, BBT vs. control



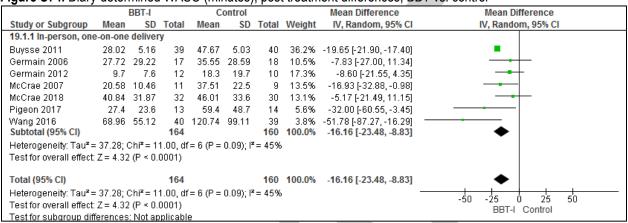
Sleep latency: PSQI

Table S39. PSG-determined sleep latency (min), post treatment differences, BBT vs. control

| Study Delivery | | BBT | | | Control | | | Mean Difference, [95% CI] |
|-----------------|--------------------------------------|-------|------|-------|---------|------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Buysse 2011 | In-person, one-on-one delivery | 29.21 | 4.81 | 39 | 25.59 | 4.74 | 40 | 3.62 [1.51, 5.73] |
| Germain 2012 | In-person, one-on-one delivery | 18.2 | 11.9 | 12 | 14.7 | 8.7 | 12 | 3.50 [-4.84, 11.84] |

Wake after sleep onset: Diary

Figure S74. Diary-determined WASO (minutes), post treatment differences, BBT vs. control



Wake after sleep onset

Table-S40. Actigraphy-determined wake after sleep onset (min), post treatment differences, BBT vs. control

| Study | Delivery | | BBT | | | Control | Mean Difference, [95% CI] | |
|----------------|--------------------------------------|-------|-------|-------|-------|---------|---------------------------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Buysse 2011 | In-person, one-on-one delivery | 46.62 | 3.99 | 39 | 55.38 | 3.97 | 40 | -8.76 [-10.52, -7.00] |
| McCrae 2018 | In-person, one-on-one delivery | 32.05 | 17.06 | 32 | 41 | 15.1 | 30 | -8.95 [-16.96, -0.94] |

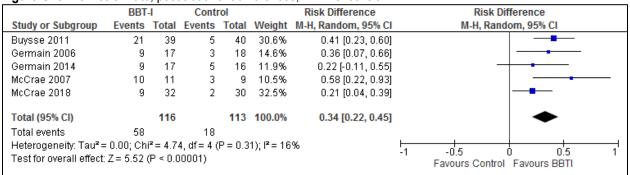
Table-S41, PSG-determined wake after sleep onset (min), post treatment differences, BBT vs. control

| Study | Delivery | | BBT Control | | | | Mean Difference, [95% CI] | |
|-----------------|--------------------------------------|-------|-------------|-------|-------|------|---------------------------|-----------------------|
| - | method | Mean | SD | Total | Mean | SD | Total | |
| Buysse 2011 | In-person, one-on-one delivery | 85.26 | 8.49 | 40 | 92.46 | 8.38 | 40 | -7.20 [-10.92, -3.48] |
| Germain 2012 | In-person, one-on-one delivery | 45.1 | 19.7 | 12 | 33 | 24.5 | 12 | 12.10 [-5.69, 29.89] |

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Remission rate

Figure-S75. Remission rate, post treatment differences, BBT vs. control



Responder rate

Table-S42. Responder rate, post treatment differences, BBT vs. control

| Study | Delivery method | BB | Г | Cor | ntrol | Risk Difference [95% CI] |
|--------------|-------------------------------------|--------|-------|--------|-------|--------------------------|
| | | Events | Total | Events | Total | |
| Germain 2014 | In-person, one-on- one, delivery | 13 | 17 | 8 | 16 | 0.26[-0.05, 0.58] |
| Pigeon 2017 | In-person, one-on- one, delivery | 4 | 11 | 2 | 13 | 0.21[-0.14, 0.56] |

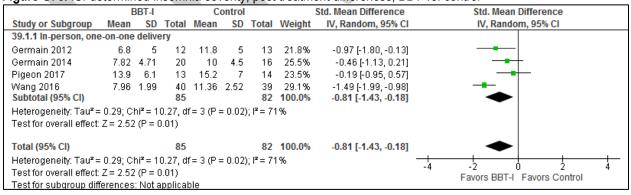
Beliefs and attitudes about sleep

Table S43. Dysfunctional Beliefs and Attitudes about Sleep (DBAS)-determined beliefs and attitudes about sleep, post treatment differences, BBT vs. control

| Study | Delivery | | BBT | | | Control | Std. Mean Difference, | |
|--------------|--------------------------------------|------|------|-------|------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Wang 2016 | In-person, one-on-one delivery | 4.88 | 0.89 | 40 | 5.09 | 0.99 | 39 | -0.22 [-0.66, 0.22] |

Insomnia severity

Figure-\$76. ISI-determined insomnia severity, post treatment differences, BBT vs. control



Number of awakenings

Table-S44. Diary-determined no. of awakenings (nights/week), post treatment differences, BBT vs. control

| Study | Delivery | | BBT | | | Control | | Mean Difference, [95% CI] |
|----------------|--------------------------------------|------|------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| McCrae 2007 | In-person, one-on-one delivery | 1.64 | 0.56 | 11 | 1.86 | 0.47 | 9 | -0.22 [-0.67, 0.23] |
| Pigeon 2017 | In-person, one-on-one delivery | 1.5 | 1 | 13 | 2 | 1.2 | 14 | -0.50[-1.33, 0.33] |

Sleep efficiency

Figure-S77. Diary-determined sleep efficiency (%), post treatment differences, BBT vs. control

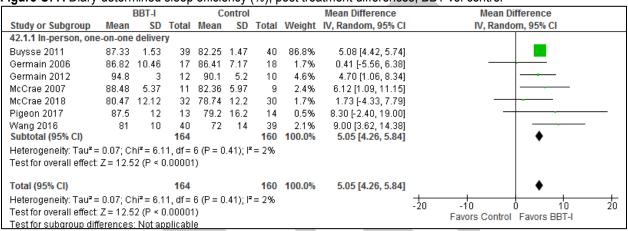


Figure-S45. Actigraphy-determined sleep efficiency (%), post treatment differences. BBT vs. control

| Study | Delivery | BBT Control | | | | Mean Difference, [95% CI] | | |
|----------------|--------------------------------------|-------------|------|-------|-------|---------------------------|-------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Buysse 2011 | In-person, one-on-one delivery | 82.82 | 1.16 | 39 | 79.99 | 1.15 | 40 | 2.83 [2.32, 3.34] |
| McCrae 2018 | In-person, one-on-one delivery | 86.39 | 7.36 | 32 | 82.58 | 7.05 | 30 | -3.81 [0.22, 7.40] |

Figure-S46. PSG-determined sleep efficiency (%), post treatment differences, BBT vs. control

| Study | Delivery | BBT | | | | Control | | Mean Difference, [95% CI] |
|-----------------|--------------------------------------|-------|------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Buysse 2011 | In-person, one-on-one delivery | 74.86 | 1.67 | 39 | 74.16 | 1.64 | 40 | 0.70 [-0.03, 1.43] |
| Germain 2012 | In-person, one-on-one delivery | 84.5 | 6.5 | 12 | 89.1 | 5 | 12 | -4.60 [-9.24, 0.04] |

Total sleep time

Figure-S78. Diary-determined total sleep time (min), post treatment differences, BBT vs. control

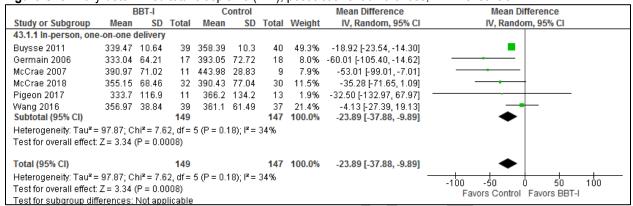


Table-S47. Actigraphy-determined total sleep time (min), post treatment differences, BBT vs. control

| Study | Delivery | | BBT Control | | | | Mean Difference, [95% CI] | |
|----------------|--------------------------------------|--------|-------------|-------|--------|-------|---------------------------|-------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Buysse 2011 | In-person, one-on-one delivery | 338.16 | 8.14 | 39 | 370.44 | 8.02 | 40 | -32.28 [-35.84, -28.72] |
| McCrae 2018 | In-person, one-on-one delivery | 371.79 | 47.69 | 32 | 375.75 | 63.46 | 30 | -3.96 [-32.04, 24.12] |

Figure-S48. PSG-determined total sleep time (min), post treatment differences, BBT vs. control

| Study | Delivery | | BBT | | | Control | | Mean Difference, [95% CI] |
|-----------------|--------------------------------------|--------|------|-------|--------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Buysse 2011 | In-person, one-on-one delivery | 324.82 | 9.43 | 39 | 333.31 | 9.31 | 40 | -8.49 [-12.62, -4.36] |
| Germain 2012 | In-person, one-on-one delivery | 355.6 | 64.9 | 12 | 389.7 | 40 | 12 | -34.10 [-77.23, 9.03] |

Table S49 – Summary of Findings table for BBT for the treatment of Psychological and Behavioral insomnia in adults

. References: Buysse 2011 (A); Wang 2016 (B); Germain 2006 (C); Germain 2012 (D); Germain 2014 (E); McCrae 2007 (F); Pigeon 2017 (G); McCrae 2018 (H); Pigeon 2017 (I)

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) |
|---|-------------------------------|--|-------------------------------------|
| | (GRADE) | CBTI vs Control | |
| Quality of sleep* | ⊕⊕⊜⊝ | The standardized mean difference in the BBTI group was 1.73 points higher ¹ [0.16 points lower to 3.62 points higher] compared to control | 220 patients |
| Diary] | LOW a,b,c | | (3 RCT) A,B,H |
| Quality of sleep | ⊕⊕⊜⊝ | The standardized mean difference in the BBTI group was 0.76 points lower¹ [0.28 points to 1.25 points lower] compared to control | 96 patients |
| PSQI] | LOW a,c | | (3 RCT) ^{C,D,E} |
| leep latency* | ⊕⊕⊕⊜ | The mean difference in the BBTI group was 10.54 minutes lower ² [9.25 mins to 11.83 mins lower] compared to control | 324 patients |
| Diary] | MODERATE | | (7 RCT) A,B,C,D,F,G,H |
| Sleep latency | ⊕⊕⊕⊜ | The mean difference in the BBTI group ranged from 3.50 to 3.62 minutes higher ² compared to control | 103 patients |
| PSG] | MODERATE ² | | (2 RCT) A,D |
| Vake after sleep onset* | ⊕⊕⊜⊝ | The mean difference in the BBTI group was 16.16 minutes lower ² [8.83 mins to 23.48 mins lower] compared to control | 324 patients |
| Diary] | LOW a,b | | (7 RCT) A,B,C,D,F,G,H |
| Vake after sleep onset | ⊕⊕⊕⊜ | The mean difference in the BBTI group ranged from 8.76 to 8.95 minutes lower ² compared to control | 141 patients |
| Actigraphy] | MODERATE ² | | (2 RCT) A,H |
| Vake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the BBTI group ranged from 7.20 minutes lower to 12.10 minutes higher ² compared to control | 103 patients |
| PSG] | L OW a,c | | (2 RCT) A,D |
| Remission rate* | ⊕⊕⊕⊜ | The percentage of patients achieving "remission" in the BBTI group was 34% higher [22% lower to 45% higher] compared to control | 229 patients |
| Diary/ISI] | MODERATE ^a | | (5 RCT) A,C,E,F,H |
| Responder rate* | ⊕⊕⊕⊜ | The percentage of patients considered "responders" in the BBTI group ranged from 21% to 26% higher¹ compared to control | 57 patients |
| Diary/ISI] | MODERATE ^a | | (2 RCT) ^{E,G} |
| Beliefs and attitudes about sleep DBAS] | ⊕⊕⊜⊝ LOW a,b | The mean difference in the BBTI group was 0.22 points lower ² [0.66 points lower to 0.22 points higher] compared to control | 79 patients (1 RCT) ^B |
| nsomnia severity | ⊕⊕⊜⊝ | The mean difference in the BBTI group was 0.81 point lower ¹ [0.18 to 1.43 points lower] compared to control | 167 patients |
| SI] | LOW a,b | | (4 RCT) B,D,E,I |
| Number of awakenings Diary] | ⊕⊕⊕⊜ MODERATE ^a | The mean difference in the BBTI group ranged from 0.22 to 0.50 fewer awakenings compared to control | 47 patients (2 RCT) F,I |
| Bleep efficiency | ⊕⊕⊕⊜ | The mean difference in the BBTI group was 5.05% higher ² [4.26% to 5.84% higher] compared to control | 304 patients |
| Diary] | MODERATE b | | (7 RCT) A,B,C,D,F,G,H |
| Bleep efficiency | ⊕⊕⊕⊜ | The mean difference in the BBTI group I ranged from 3.81% lower to 2.83% higher² compared to control | 141 patients |
| Actigraphy] | MODERATE ² | | (2 RCT) A,H |
| Bleep efficiency | ⊕⊕⊜⊝ | The mean difference in the BBTI group ranged from 4.60% lower ² to 0.70% higher compared to control | 103 patients |
| PSG] | LOWa,c | | (2 RCT) A,D |
| otal sleep time | ⊕⊕⊕⊜ | The mean difference in the BBTI group was 23.89 minutes lower ² [9.89 mins to 37.88 mins lower] compared to control | 296 patients |
| Diary] | MODERATE ² | | (6 RCT) A,B,C,F,H,I |
| otal sleep time | ⊕⊕⊕⊜ | The mean difference in the BBTI ranged from 3.96 minutes to 32.28 minutes lower ² compared to control | 141 patients |
| Actigraphy] | MODERATE ^a | | (2 RCT) A,H |
| otal sleep time | ⊕⊕⊕⊜ | The mean difference in the BBTI group ranged from 8.49 minutes to 34.10 minutes lower ² compared to control | 103 patients |
| PSG] | MODERATE ^a | | (2 RCT) A,D |

^{*} Critical Outcome

a. 95% CI crosses clinical significance threshold and/or <200 participants b. Risk of bias [no patient blinding, allocation concealment]

c. Inconsistent results

¹ Meets the clinical significance threshold ² Does not meet the clinical significance threshold

Stimulus control

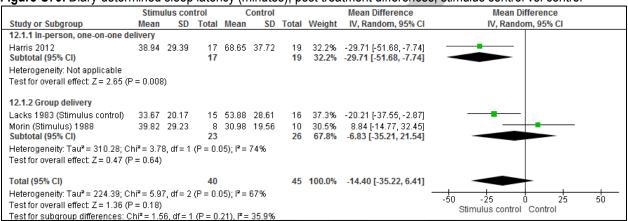
Quality of sleep

Table-S50. PSQI-determined quality of sleep, post treatment differences, stimulus control vs. control

| Study | Delivery | Stimulus Control | | | | Control | Std. Mean Difference, | |
|-------------|------------|------------------|------|-------|-------|---------|-----------------------|----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Harris 2012 | In-person, | 8.73 | 2.71 | 17 | 11.11 | 2.72 | 19 | -0.86 [-1.54, -0.17] |
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Sleep latency

Figure-S79. Diary-determined sleep latency (minutes), post treatment differences, stimulus control vs. control



Wake after sleep onset

Table S51. Diary-determined WASO (minutes), post treatment differences, stimulus control vs. control

| Study | Delivery | Delivery Stimulus Control | | | | Control | Mean Difference, [95% CI] | |
|-------------|--------------------------------------|---------------------------|-------|-------|-------|---------|---------------------------|------------------------|
| - | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person, one-on-one delivery | 42.66 | 37.53 | 17 | 80.31 | 57.38 | 19 | -37.65 [-69.02, -6.28] |
| Morin 1988 | Group delivery | 42.88 | 43.57 | 8 | 71.4 | 39.22 | 10 | -28.52 [-67.28, 10.24] |

Wake after sleep onset

Table S52. Actigraphy-determined wake after sleep onset (min), post treatment differences, stimulus control vs. control

| Study | Delivery | | Stimulus Cont | rol | Control | | | Mean Difference, [95% CI] |
|-------------|--------------------------------------|-------|---------------|-------|---------|-------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person, one-on-one delivery | 92.47 | 44 | 17 | 100.19 | 46.49 | 19 | -7.72 [-37.29, 21.85] |

Number of awakenings

Table S53. Diary-determined no. of awakenings (no./nights), post treatment differences, stimulus control vs. control

| Study | Delivery | Stimulus Control | | | | Control | Mean Difference, [95% CI] | |
|------------|----------------|------------------|------|-------|------|---------|---------------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Morin 1988 | Group delivery | 1.92 | 1.13 | 8 | 2.61 | 1.07 | 10 | -0.69 [-1.72, 0.34] |
| | | | | | | | | |

Sleep efficiency

Table S54. Diary-determined total sleep efficiency (%), post treatment differences, stimulus control vs. control

| Study | Delivery | | Stimulus Cont | rol | | Control | | Mean Difference, [95% CI] |
|-------|----------|------|---------------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |

| Harris 2012 | In-person, | 81.57 | 7.34 | 17 | 68.24 | 14.14 | 19 | 13.33 [6.08, 20.58] |
|-------------|------------|-------|------|----|-------|-------|----|---------------------|
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Table S55. Actigraphy-determined total sleep efficiency (%), post treatment differences, stimulus control vs. control

| Study | Delivery | | Stimulus Cont | rol | | Control | | Mean Difference, [95% CI] |
|-------------|------------|-------|---------------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person, | 75.61 | 9.82 | 17 | 71.92 | 11.91 | 19 | 3.69 [-3.41, 10.79] |
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Total sleep time

Table S56. Diary-determined total sleep time (min), post treatment differences, stimulus control vs. control

| Study Delivery | | | Stimulus Cont | rol | | Control | | Mean Difference, [95% CI] |
|----------------|--------------------------------------|--------|---------------|-------|--------|---------|-------|---------------------------|
| - | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person, one-on-one delivery | 387.95 | 57.36 | 17 | 350.26 | 76.76 | 19 | 37.69 [-6.30, 81.68] |
| Morin 1988 | Group delivery | 354.4 | 83.26 | 8 | 340.16 | 70.29 | 10 | 14.24 [-58.06, 86.54] |

Table S57. Actigraphy-determined total sleep time (min), post treatment differences, stimulus control vs. control

| Study | Delivery | Stimulus Control | | | Control | | | Mean Difference, [95% CI] |
|-------------|------------|------------------|-------|-------|---------|-------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person, | 365.12 | 65.98 | 17 | 368.5 | 72.74 | 19 | -3.38 [-48.70, 41.94] |
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Table S58 – Summary of Findings table for Stimulus control for the treatment of Psychological and Behavioral insomnia in adults

References: Harris 2012 (A); Lacks 1983 (B); Morin 1988 (C)

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) |
|---------------------------------|-------------------------|--|------------------------------|
| | (GRADE) | CBTI vs Control | |
| Quality of sleep | ⊕⊕⊜⊝ | The standardized mean difference in the Stimulus control group was 0.86 points lower¹ [0.17 points lower to 1.54 points lower] compared to control | 36 patients |
| [PSQI | LOW a,b | | (1 RCT) ^A |
| Sleep latency* | ⊕⊕⊜⊝ | The mean difference in the Stimulus control group was 14.4 minutes lower ² [35.22 mins lower to 6.41 mins higher] compared to control | 85 patients |
| [Diary] | L OW a,b | | (3 RCT) A,B,C |
| Wake after sleep onset* [Diary] | ⊕⊕⊜⊝ L OW a,b | The mean difference in the Stimulus control group ranged from 28.52 minutes lower¹ to 37.65 minutes lower compared to control | 54 patients (2 RCT) A,C |
| Wake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the Stimulus control group was 7.72 minutes lower ² [37.29 mins lower to 21.85 mins higher] compared to control | 36 patients |
| [Actigraphy] | L OW a,b | | (1 RCT) ^A |
| Number of awakenings | ⊕⊕⊜⊝ | The mean difference in the Stimulus control group was 0.69 points lower ¹ [1.72 points lower to 0.34 points higher] compared to control | 18 patients |
| [Diary] | L OW a,b | | (1 RCT) ^c |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Stimulus control group was 13.33% higher¹ [6.08% to 20.58% higher] compared to control | 36 patients |
| [Diary] | L OW a,b | | (1 RCT) ^A |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Stimulus control group was 3.69% higher ² [3.41% lower to 10.79% higher] compared to control | 36 patients |
| [Actigraphy] | LOW a,b | | (1 RCT) ^A |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the Stimulus control group ranged from 14.24 minutes to 37.69 minutes higher¹ compared to control | 54 patients |
| [Dairy] | LOW a,b | | (2 RCT) A,C |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the Stimulus control group was 3.38 minutes lower ² [48.70 mins lower to 41.94 mins higher] compared to control | 36 patients |
| [Actigraphy] | LOW a,b | | (1 RCT) ^A |

^{*} Critical Outcome

Supplemental material 65

a 95% CI crosses clinical significance threshold and/or <200 participants

b. Risk of bias [no patient blinding, allocation concealment]

¹ Meets the clinical significance threshold



Supplemental material 66 May 12, 2020

Sleep restriction

Quality of sleep

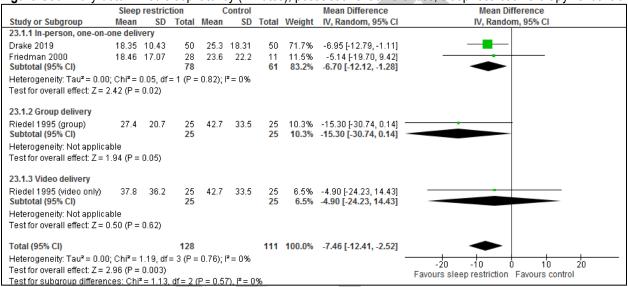
Table S59. Dairy-determined quality of sleep, post treatment differences, sleep restriction therapy vs. control

| Study | Delivery | | Sleep Restrict | ion | | Control | | Std. Mean Difference, |
|-------------|--------------------------------------|------|----------------|-------|------|---------|-------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Drake 2019 | In-person, one-on-one delivery | 3.53 | 0.63 | 50 | 3.12 | 0.64 | 50 | 0.64 [0.24, 1.04] |
| Riedel 1995 | Group and video delivery | 2.5 | 1.55 | 50 | 4.5 | 1.7 | 10 | 0.8 [0.31, 1.30] |

^{*}Pooled data video and group for Riedel 1995

Sleep latency: Diary

Figure-S80. Diary-determined sleep latency (minutes), post treatment differences, sleep restriction therapy vs. control



^{*}Riedel 1995 (group and video) uses same control data

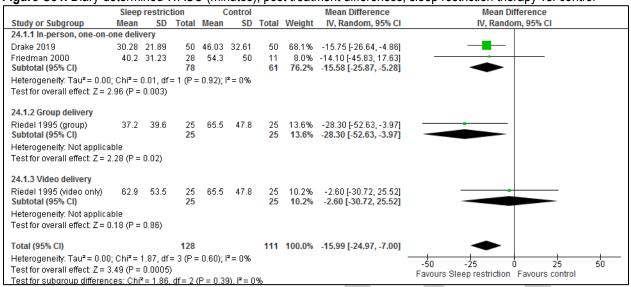
Sleep latency: PSG

Table S60. PSG-determined sleep latency (min), post treatment differences, sleep restriction therapy vs. control

| Study | Delivery | | Sleep Restrict | ion | | Control | | Mean Difference, [95% CI] |
|------------------|--------------------------------------|------|----------------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Friedman 2000 | In-person, one-on-one delivery | 9.69 | 13.88 | 15 | 11.6 | 10.9 | 4 | -1.91[-14.69, 10.87] |

Wake after sleep onset: Diary

Figure-S81. Diary-determined WASO (minutes), post treatment differences, sleep restriction therapy vs. control



^{*}Riedel 1995 (group and video) uses same control data

Wake after sleep onset: Actigraphy

Table S61. Actigraphy-determined wake after sleep onset (min), post treatment differences, sleep restriction therapy vs. control

| Study | Delivery | | Sleep Restrict | ion | | Control | Mean Difference, [95% CI] | |
|----------|------------------------|-------|----------------|-------|------|---------|---------------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Friedman | In-person, | 29.01 | 23.34 | 27 | 27.6 | 39 | 10 | 1.41[-24.32, 27.14] |
| 2000 | one-on-one delivery | | | | | | | |

Table S62. PSG-determined wake after sleep onset (min), post treatment differences, sleep restriction therapy vs. control

| | 5 " | | | | | | | |
|------------------|------------|------|----------------|-------|------|---------|---------------------------|---------------------|
| Study | Delivery | | Sleep Restrict | ion | | Control | Mean Difference, [95% CI] | |
| | method | Mean | SD | Total | Mean | SD | Total | |
| Friedman 2000 | In-person, | 42.6 | 20.14 | 15 | 29 | 17.7 | 4 | 13.60[-6.52, 33.72] |
| 2000 | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Remission rate

Table-\$63. ISI/ Diary-determined remission rate, post treatment differences, sleep restriction therapy vs. control

| Study | Delivery method | Sleep Res | estriction Control | | Risk Difference [95% CI] | |
|------------|-------------------------------------|-----------|--------------------|--------|--------------------------|------------------|
| | | Events | Total | Events | Total | |
| Drake 2019 | In-person, one-on- one, delivery | 28 | 49 | 16 | 48 | 0.24[0.05, 0.43] |

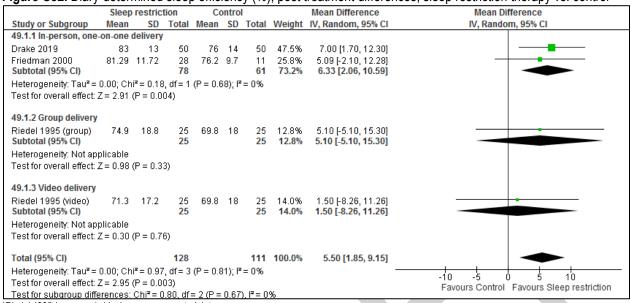
Insomnia severity

Table-S64. ISI-determined insomnia severity, post treatment differences, sleep restriction therapy vs. control

| Study | Delivery | | Sleep Restrict | ion | | Control | Std. Mean Difference, | |
|------------|------------|------|----------------|-------|-------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Drake 2019 | In-person, | 8.64 | 4.18 | 50 | 14.24 | 4,49 | 50 | -1.28[-1.71, -0.85] |
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Sleep efficiency

Figure-S82. Diary-determined sleep efficiency (%), post treatment differences, sleep restriction therapy vs. control



^{*}Riedel 1995 (group and video) uses same control data

Table-S65. Actigraphy-determined sleep efficiency (%), post treatment differences, sleep restriction therapy vs. control

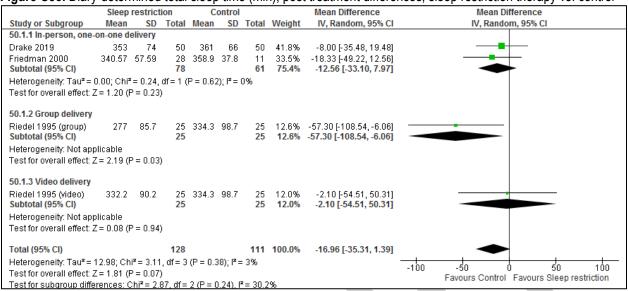
| Study | Delivery | | Sleep Restrict | ion | | Control | Mean Difference, [95% CI] | |
|----------|------------|-------|----------------|-------|------|---------|---------------------------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Friedman | In-person, | 89.51 | 5.86 | 27 | 89.4 | 6.6 | 10 | 0.11 [-4.24, 4.76] |
| 2000 | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Table-S66. PSG-determined sleep efficiency (%), post treatment differences, sleep restriction therapy vs. control

| Study | Delivery | Sleep Restriction | | | | Control | | Mean Difference, [95% CI] |
|------------------|--------------------------------------|-------------------|------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Friedman 2000 | In-person, one-on-one delivery | 84.49 | 7.59 | 15 | 90.1 | 4 | 3 | -5.61 [-11.55, 0.33] |

Total sleep time

Figure-S83. Diary-determined total sleep time (min), post treatment differences, sleep restriction therapy vs. control



^{*}Riedel 1995 (group and video) uses same control data

Table-S67. Actigraphy-determined total sleep time (min), post treatment differences, sleep restriction therapy vs. control

| Study | Delivery | | Sleep Restrict | on Control | | | | Mean Difference, [95% CI] |
|----------|------------|--------|----------------|------------|-------|------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Friedman | In-person, | 381.94 | 27.82 | 27 | 422.2 | 55.4 | 10 | -40.26 [-76.16, -4.36] |
| 2000 | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Table-S68. PSG-determined total sleep time (min), post treatment differences, sleep restriction therapy vs. control

| Study | Delivery | Sleep Restriction | | | | Control | Mean Difference, [95% CI] | |
|------------------|--------------------------------------|-------------------|-------|-------|-------|---------|---------------------------|----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Friedman 2000 | In-person, one-on-one delivery | 339.99 | 38.95 | 15 | 383.9 | 43,91 | 4 | -43.91[-90.52, 2.70] |

Table S69 - Summary of Findings table for Sleep restriction for the treatment of Psychological and Behavioral insomnia in adults

References: Riedel 1995 (A); Friedman 2000 (B); Epstein 2012 (C); Drake 2019 (D)

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) | |
|--------------------------------|-------------------------|--|------------------------------|--|
| | (GRADE) | CBTI vs Control | | |
| Quality of sleep* | ⊕⊕⊜⊝ | The standardized mean difference in the Sleep restriction group was 0.71 points higher¹ [0.42 to 1.0 points higher] compared to control | 175 patients | |
| [Diary] | LOW a,b | | (2 RCT) AD | |
| Sleep latency* | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 7.46 minutes lower ² [2.52 mins lower to 12.41 mins higher] compared to control | 214 patients | |
| [Diary] | L OW a,b | | (3 RCT) A,B,D | |
| Sleep latency | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 1.91 minutes lower ² [14.69 mins lower to 10.87 mins higher] compared to control | 19 patients | |
| PSG] | LOW a,b | | (1RCT) ^B | |
| Wake after sleep onset* | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 15.99 minutes lower ¹ 7.00 mins to 24.97 mins lower ¹ compared to control | 214 patients | |
| Diary] | LOW a,b | | (3 RCT) A,B,D | |
| Wake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 1.41 minutes higher ² [24.32 mins lower to 27.14 mins higher] compared to control | 37 patients | |
| Actigraphy] | LOW a,b | | (1 RCT) ^B | |
| Wake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 13.6 minutes higher ² [6.52 mins lower to 33.72 mins higher] compared to control | 19 patients | |
| PSG] | L OW a,b | | (1 RCT) ^B | |
| Remission rate* | ⊕⊕⊜⊝ | The percentage of patients achieving "remission" in the Sleep restriction group was 20% higher¹ [9% to 32% higher¹ compared to control | 170 patients | |
| SI] | LOW a,b | | (2 RCT) ^{C,D} | |
| Responder rate* | ⊕⊕⊜⊝ | The percentage of patients considered "responders" in the Sleep restriction group ranged from 35% higher¹ [14% to 55% higher] compared to control | 73 patients | |
| ISI] | L OW a,b | | (1 RCT) ^c | |
| nsomnia severity | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 1.28 points lower ¹ [0.85 to 1.71 points lower] compared to control | 100 patients | |
| S] | L OW a,b | | (1 RCT) ^D | |
| Bleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 5.50% higher ² [1.85% lower to 9.15% higher] compared to control | 214 patients | |
| Diary] | L OW a,b | | (3 RCT) A,B,D | |
| Bleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 0.11% higher ² 4.54% lower to 4.76% higher] compared to control | 37 patients | |
| Actigraphy] | LOW a,b | | (1 RCT) ^B | |
| Bleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 5.61% lower ² [11.55% lower to 0.33% higher] compared to control | 19 patients | |
| PSG] | L OW a,b | | (1 RCT) ^B | |
| Fotal sleep time Diary] | ⊕⊕⊜⊝ L OW a,b | The mean difference in the Sleep restriction group was 16.96 minutes lower ² [35.31 mins lower to 1.39 mins higher] compared to control | 214 patients (3RCT) A,B,D | |
| Fotal sleep time | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 40.26 minutes lower ² [4.36 mins to 76.16 mins lower] compared to control | 37 patients | |
| Actigraphy] | L OW a,b | | (1 RCT) ^B | |
| Fotal sleep time | ⊕⊕⊜⊝ | The mean difference in the Sleep restriction group was 43.91 minutes lower ² [90.52 mins lower to 2.7 mins higher] compared to control | 19 patients | |
| PSG] | LOW a,b | | (1 RCT) ^B | |
| * Critical Outcome | | | | |

^{*} Critical Outcome

a 95% CI crosses clinical significance threshold and/or <200 participants

b Risk of bias [no patient blinding, allocation concealment]

Meets the clinical significance threshold

Does not meet the clinical significance threshold

Relaxation therapy

Quality of sleep

Table S70. Diary-determined quality of sleep (minutes), post treatment differences, relaxation therapy vs. control

| Study | Delivery | Relaxation Therapy | | | | Control | Std. Mean Difference, | |
|------------|-----------------------|--------------------|------|-------|------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Means 2000 | In-person delivery | 3.4 | 0.4 | 28 | 3 | 0.4 | 29 | 0.99 [0.43, 1.54] |
| Creti 2005 | Audio delivery | 3.31 | 0.68 | 14 | 3.32 | 0.65 | 13 | -0.01 [-0.77, 0.74] |

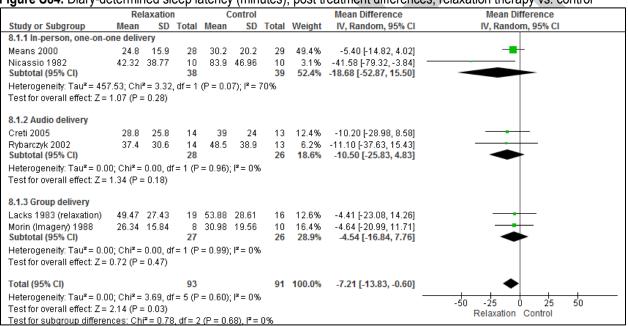
Quality of sleep (PSQI)

Table S71. PSQI-determined quality of sleep, post treatment differences, relaxation therapy vs. control

| Study | Delivery | Relaxation Therapy | | | | Control | Std. Mean Difference, | |
|-------------------|----------------|--------------------|-----|-------|------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Rybarczyk 2002 | Audio delivery | 7.5 | 3.6 | 14 | 10.7 | 2.8 | 13 | -0.96 [-1.76, -0.15 |

Sleep latency

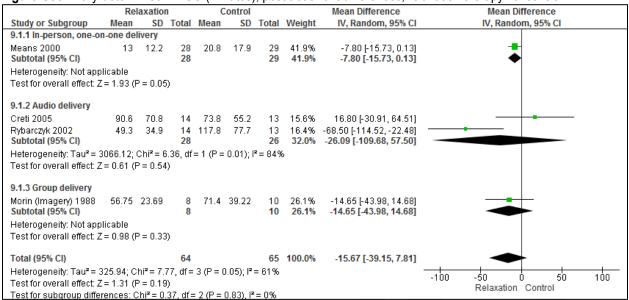
Figure S84. Diary-determined sleep latency (minutes), post treatment differences, relaxation therapy vs. control



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Wake after sleep onset

Figure-S85. Diary-determined WASO (minutes), post treatment differences, relaxation therapy vs. control



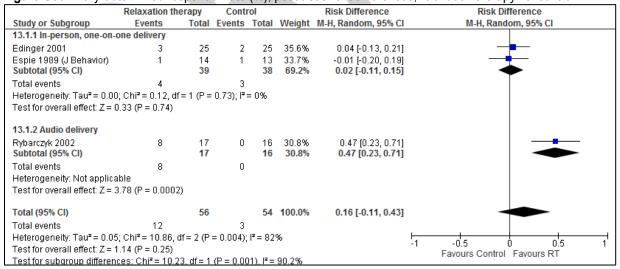
Wake after sleep onset (Act)

Table S72. Actigraphy-determined wake after sleep onset (min), post treatment differences, relaxation therapy vs. control

| Study | Delivery | R | Relaxation The | rapy | Control | | | Mean Difference, [95% CI] |
|-------------------|----------------|------|----------------|-------|---------|------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Rybarczyk20 02 | Audio delivery | 77.1 | 41.5 | 14 | 102.1 | 57.1 | 13 | -25.0 [-62.89, 12.89] |

Responder rate

Figure-S86. Diary-determined responder rate (%), post treatment differences, relaxation therapy vs. control



Beliefs and attitudes about sleep

 Table S73. Dysfunctional Beliefs and Attitudes about Sleep (DBAS)-determined beliefs and attitudes about sleep, post

treatment differences, relaxation therapy vs. control

| Study | Delivery | F | Relaxation Therapy | | | Control | Std. Mean Difference, | |
|-------------------|--------------------------|------|--------------------|-------|------|---------|-----------------------|----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Rybarczyk20 02 | Audio delivery | 18.5 | 7.9 | 14 | 27.2 | 8.8 | 13 | -1.01 [-1.82, -0.20] |
| Means 2000 | In-person, one-on-one | 4.4 | 1 | 28 | 4.7 | 1.1 | 29 | -0.28[-0.80, 0.24] |

Nights using hypnotics

Table S74. Diary-determined nights using hypnotics (nights/week), post treatment differences, relaxation therapy vs. control

| Study | Delivery | Relaxation Therapy | | | | Control | Mean Difference, [95% CI] | |
|-------------------|----------------|--------------------|-----|-------|------|---------|---------------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Rybarczyk20 02 | Audio delivery | 0.9 | 1.9 | 14 | 2.3 | 3.1 | 12 | -1.40 [-3.42, 0.62] |

Number of awakenings

Table S75. Diary-determined number of awakenings (no./night), post treatment differences, relaxation therapy vs. control

| Study | Delivery | Relaxation Therapy | | | Control | | | Mean Difference, [95% CI] |
|----------------------------|-------------------|--------------------|------|-------|---------|------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Morin (Imagery) 1988 | Group delivery | 2.46 | 1.24 | 8 | 2.61 | 1.07 | 10 | -0.15 [-1.24, 0.94] |

Sleep efficiency

Figure-S87. Diary-determined sleep efficiency (%), post treatment differences, relaxation therapy vs. control

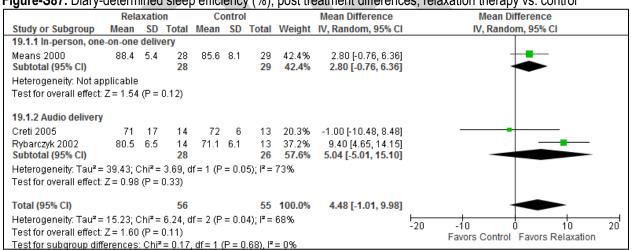


Table S76. Actigraphy-determined sleep efficiency (%), post treatment differences, relaxation therapy vs. control

| Study | Delivery | R | Relaxation The | ару | | Control | Mean Difference, [95% CI] | |
|-------------------|----------------|------|----------------|-------|------|---------|---------------------------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Rybarczyk20 02 | Audio delivery | 77.4 | 12.8 | 14 | 76.8 | 8.6 | 13 | 0.60 [-7.57, 8.77] |

Total sleep time

Figure-S88. Diary-determined total sleep time (min) post treatment differences, relaxation therapy vs. control

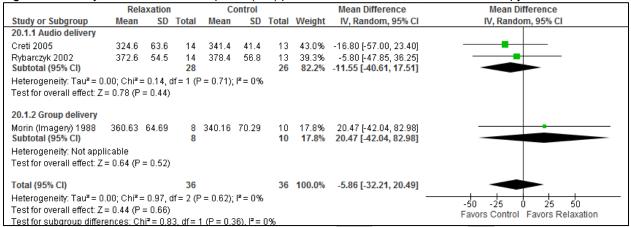


Table S77. Actigraphy-determined total sleep time (min), post treatment differences, relaxation therapy vs. control

| Study | Delivery | Relaxation Therapy | | | | Control | Mean Difference, [95% CI] | |
|-------------------|----------------|--------------------|-------|-------|-------|---------|---------------------------|------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Rybarczyk20 02 | Audio delivery | 439 | 109.1 | 14 | 466.5 | 67 | 13 | -27.50 [-95.27, 40.27] |

Table S78 – Summary of Findings table for Relaxation therapy for the treatment of Psychological and Behavioral insomnia in adults

References: Means 2000 (A); Creti 2005 (B); Rybarczyk 2002 (C); Nicassio 1982 (D); Lacks 1983 (E); Morin 1988 (F); Edinger 2001 (G); Espie 1989 (H)

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) |
|--|-------------------------|--|--|
| | (GRADE) | CBTI vs Control | |
| Quality of sleep* | ⊕○○○ | The standardized mean difference in the RT group was 0.52 points higher¹ [0.46 points lower to 1.50 points higher] compared to control | 84 patients |
| [Diary] | VERY LOW a,b,c | | (2 RCT) A, B |
| Quality of sleep | ⊕⊕⊜⊝ | The standardized mean difference in the RT group was 0.96 points lower¹ [0.15 points lower to 1.76 points lower] compared to control | 27 patients |
| [PSQI] | L OW a,c | | (1 RCT) ^c |
| Sleep latency* | ⊕⊕⊜⊝ | The mean difference in the RT group was 7.21 mins lower ² [0.60 mins to 13.83 mins lower] compared to control | 184 patients |
| [Diary] | L OW a,c | | (6 RCT) A,B,C,D,E,F |
| Wake after sleep onset* | ⊕⊕⊜⊝ | The mean difference in the RT group was 15.67 mins lower ² [39.15 mins lower to 7.81 mins higher] compared to control | 129 patients |
| [Diary] | L OW a,c | | (3 RCT) A,B,C,F |
| Responder rate* [Diary/ISI] | ⊕⊖⊖⊖ VERY LOW a,b,c | The percentage of patients considered "responders" in the RT group was 16% higher 1 [11% lower to 43% higher] compared to control | 109 patients (3 RCT) ^{C,G,H} |
| Beliefs and attitudes about sleep [DBAS] | ⊕⊕⊜⊝ L OW a,c | The mean difference in the RT group ranged from 0.28 to 1.01 points lower¹ compared to control | 84 patients (2 RCT) ^C |
| Nights using hypnotics | ⊕⊕⊜⊝ | The mean difference in the RT group was 1.4 nights per week lower ² [3.42 nights per week lower to 0.62 nights per week higher] compared to control | 26 patients |
| [Diary] | L OW a,c | | (1RCT) ^c |
| Number of awakenings | ⊕⊕⊜⊝ | The mean difference in the RT group was 0.15 points lower ² [1.24 points lower to 0.94 points higher] compared to control | 18 patients |
| [Diary] | L OW a,c | | (1 RCT) ^F |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the RT group was 4.48% higher ² [1.01% lower to 9.98% higher] compared to control | 111 patients |
| [Diary] | L OW a,c | | (3 RCT) ^{A,B,C} |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the RT group was 0.6% higher ² [7.57% lower to 8.77% higher] compared to control | 27 patients |
| [Actigraphy] | L OW a,c | | (1 RCT) ^c |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the RT group was 5.86 minutes lower ² [32.21 mins lower to 20.49 mins higher] compared to control | 72 patients |
| [Dairy] | L OW a,c | | (3 RCT) ^{B,C,F} |

| Total sleep time | $\oplus \oplus \bigcirc \bigcirc$ | The mean difference in the RT group was 27.5 minutes lower ² [95.27 mins lower to | 27 patients |
|------------------|-----------------------------------|--|----------------------|
| [Actigraphy] | | 40.27 mins higher] compared to control | (1 RCT) ^c |



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^{*} Critical Outcome

a 95% CI crosses clinical significance threshold and/or <200 participants

b. Inconsistent subgroup differences

c. Risk of bias [no patient blinding, allocation concealment]

1 Meets the clinical significance threshold

2 Does not meet the clinical significance threshold

Sleep hygiene

Sleep latency

Table S79. Diary-determined sleep latency (minutes), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | | Control | Mean Difference, [95% CI] | |
|-----------------|-----------------------|---------------|-------|-------|------|---------|---------------------------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 15.1 | 11.13 | 17 | 15.9 | 16.8 | 9 | -0.80 [-12.98, 11.38] |

Wake after sleep onset

Table S80. Diary-determined WASO (minutes), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | | Control | | Mean Difference, [95% CI] |
|-----------------|-----------------------|---------------|------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 50.5 | 28.4 | 17 | 65.7 | 31.2 | 9 | -15.20 [-39.65, 9.25] |

Wake after sleep onset

Table S81. Actigraphy-determined wake after sleep onset (min), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | Control | | | Mean Difference, [95% CI] |
|-----------------|-----------------------|---------------|------|-------|---------|------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 59.6 | 24.3 | 17 | 72.2 | 39.6 | 9 | -12.60 [-40.93, 15.73] |

Responder rate

Table S82. Diary-determined responder rate, post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | C | ontrol | Risk Difference [95% CI] |
|-----------------|-----------------------|---------------|-------|--------|--------|--------------------------|
| | method | Events | Total | Events | Total | |
| Edinger 2005 | In-person delivery | 8 | 14 | 2 | 12 | 0.40[0.07,0.74] |

Sleep efficiency

Table S83. Diary-determined sleep efficiency (%), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | | Control | Mean Difference, [95% CI] | |
|-----------------|-----------------------|---------------|------|-------|------|---------|---------------------------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 84.7 | 7.01 | 17 | 83.3 | 7.2 | 9 | 1.40 [-4.36, 7.16] |

Table S84. Actigraphy-determined sleep efficiency (%), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | | Control | Mean Difference, [95% CI] | |
|-----------------|-----------------------|---------------|------|-------|------|---------|---------------------------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 85.4 | 5.77 | 17 | 82.6 | 9.3 | 9 | 2.80 [-3.87, 9.47] |

Total wake time

Table S85. Diary-determined total awake time (min), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | | Control | Mean Difference, [95% CI] | |
|-----------------|-----------------------|---------------|-------|-------|------|---------|---------------------------|------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 76.4 | 35.57 | 17 | 88.7 | 45 | 9 | -12.30 [-46.22, 21.62] |

Table S86. Actigraphy-determined total awake time (min), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | | Control | Mean Difference, [95% CI] | |
|-----------------|-----------------------|---------------|-------|-------|------|---------|---------------------------|------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 72 | 30.92 | 17 | 90.3 | 51 | 9 | -18.30 [-54.72, 18.12] |

Total sleep time

Table \$87. Diary-determined total sleep time (min), post treatment differences, sleep hygiene vs. control.

| Study | Delivery | Sleep hygiene | | | | Control | Mean Difference, [95% CI] | |
|-----------------|-----------------------|---------------|-------|-------|-------|---------|---------------------------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 424.8 | 61.85 | 17 | 432.5 | 54.3 | 9 | -7.70 [-53.78, 38.38] |

Table S88. Actigraphy -determined total sleep time (min), post treatment differences, sleep hygiene vs. control

| Study | Delivery | Sleep hygiene | | | | Control | Mean Difference, [95% CI] | |
|-----------------|-----------------------|---------------|-------|-------|-------|---------|---------------------------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Edinger 2005 | In-person delivery | 421.6 | 51.13 | 17 | 428.7 | 78.3 | 9 | -7.10 [-63.74, 49.54] |

Table S89 - Sleep Hygiene for the treatment of Psychological and Behavioral insomnia in adults

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) | |
|-------------------------|-------------------------|---|------------------------------|--|
| • | (GRADE) | CBTI vs Control | ` ′ | |
| Sleep latency* | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 0.8 minutes lower ² [12.98 mins lower to 11.38 mins higher] compared to control | 26 patients | |
| [Diary] | L OW a,b | | (1 RCT) ^A | |
| Wake after sleep onset* | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 15.20 minutes lower ² [39.65 mins lower to 9.25 mins higher] compared to control | 26 patients | |
| [Diary] | LOW a,b | | (1 RCT) ^A | |
| Wake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 12.60 minutes lower ² [40.93 mins lower to 15.73 mins higher] compared to control | 26 patients | |
| [Actigraphy] | LOW a,b | | (1 RCT) ^A | |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 1.4% higher ² [4.36% lower to 7.16% higher] compared to control | 26 patients | |
| [Diary] | L OW a,b | | (1 RCT) ^A | |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 2.8% higher ² [3.87% lower to 9.47% higher] compared to control | 26 patients | |
| [Actigraphy] | L OW a,b | | (1 RCT) ^A | |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 12.3 minutes lower ² [46.22 mins lower to 21.62 mins higher] compared to control | 26 patients | |
| [Dairy] | L OW a,b | | (1 RCT) ^A | |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 18.3 minutes lower ² [54.72 mins lower to 18.12 mins higher] compared to control | 26 patients | |
| [Actigraphy] | L OW a,b | | (1 RCT) ^A | |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 7.7 minutes lower ² [53.78 mins lower to 38.38 mins higher] compared to control | 26 patients | |
| [Dairy] | L OW a,b | | (1 RCT) ^A | |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the Sleep hygiene group was 7.1 minutes lower ² [63.74 mins lower to 49.54 mins higher] compared to control | 26 patients | |
| [Actigraphy] | L OW a,b | | (1 RCT) ^A | |

 ^{*} Critical Outcome

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a 95% CI crosses clinical significance threshold and/or <200 participants

b. Risk of bias [no patient blinding, allocation concealment]

¹ Meets the clinical significance threshold

² Does not meet the clinical significance threshold

Biofeedback

Sleep latency

Table S90. Diary-determined sleep latency (minutes), post treatment differences, biofeedback vs. control

| Study | Delivery | Biofeedback Control | | | Control | | Mean Difference, [95% CI] | |
|------------------|--------------------------------------|---------------------|-------|-------|---------|-------|---------------------------|-------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Nicassio 1982 | In-person, one-on-one delivery | 31.32 | 12.73 | 10 | 83.9 | 46.96 | 10 | -52.58 [-82.74, -22.42] |

Table S91 – Summary of Findings table for Biofeedback for the treatment of Psychological and Behavioral insomnia in adults

References: Nicassio 1982 (A)

| 1002 (1) | ' | | |
|----------------------------|---------------------------------------|---|-------------------------------------|
| Outcomes [Tool] | Quality of the evidence (GRADE) | Absolute Difference CBTI vs Control | No of Participants (studies) |
| Sleep latency * [Diary] | ⊕⊕⊜⊝ L OW a,b | The mean difference in the Biofeedback group was 52.58 minutes lower¹ [22.42 min to 82.74 mins lower] compared to control | 20 patients (1 RCT) ^A |

^{*} Critical Outcome

b. Risk of bias [no patient blinding and selective outcome reporting]
 1 Meets the clinical significance threshold² Does not meet the clinical significance threshold



a. <200 participants

Paradoxical Intention

Sleep latency

Table S92. Diary-determined sleep latency (minutes), post treatment differences, paradoxical intention vs. control

| Study | Delivery | Pa | aradoxical Inte | ntion | | Control | | Mean Difference, [95% CI] |
|-------------|--------------------------------------|-------|-----------------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ascher 1978 | In-person, one-on-one delivery | 28.63 | 16.64 | 8 | 56.88 | 34.06 | 17 | -28.25[-48.13, -8.37] |
| Lacks1983 | Group delivery | 52.5 | 21.93 | 14 | 53.88 | 28.61 | 16 | -1.38 [-19.50, 16.74] |

^{*}Ascher 1978 (control and waitlist pooled data)

Number of awakenings

Table \$93. Diary-determined number of awakenings (min), post treatment differences, paradoxical intention vs. control

| Study | Delivery | Paradoxical Intention | | | | Control | Mean Difference, [95% CI] | |
|-------------|------------|-----------------------|------|-------|------|---------|---------------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ascher 1978 | In-person, | 0.5 | 0.54 | 8 | 1.25 | 0.71 | 9 | -0.75[-1.35, -0.15] |
| | one-on-one | | | | | | | |
| | delivery | | | | | | | |

Table S94 — Summary of Findings table for Paradoxical intention for the treatment of Psychological and Behavioral insomnia in adults

References: Ascher 1978 (A); Lacks 1983 (B)

| Outcomes [Tool] | Quality of the evidence (GRADE) | Absolute Difference CBTI vs Control | No of Participants (studies) |
|----------------------|---------------------------------------|--|------------------------------|
| Sleep latency* | ⊕⊖⊖⊖ | The mean difference in the Paradoxical intention group was 18.31 minutes lower ² [40.36 mins lower to 3.74 mins higher] compared to control | 55 patients |
| [Diary] | VERY LOW a,b,c | | (2 RCT) AB |
| Number of awakenings | ⊕⊕⊜⊝ | The mean difference in the Paradoxical intention group was 0.75 points lower ² [0.15 points to 1.35 points lower] compared to control | 17 patients |
| [Diary] | L OW a,b | | (1 RCT) ^A |

^{*} Critical Outcome

a 95% CI crosses clinical significance threshold and/or <200 participants

b. Risk of bias [no patient blinding, allocation concealment]

^c Inconsistency

¹ Meets the clinical significance threshold

² Does not meet the clinical significance threshold

Intensive Sleep Retraining (ISR)

Quality of sleep

Table \$95. PSQI-determined sleep quality, post treatment differences, ISR vs. control

| Study Delivery | | ISR | | | Control | | | Std. Mean Difference, |
|----------------|-----------------------|------|------|-------|---------|------|-------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Harris 2012 | In-person delivery | 8.88 | 3.05 | 16 | 11.11 | 2.72 | 19 | -0.76 [-1.45, -0.07] |

Sleep latency

Table S96. Diary-determined sleep latency (minutes), post treatment differences, ISR vs. control

| Study | Delivery | ISR | | | | Control | Mean Difference, [95% CI] | |
|-------------|-----------------------|-------|-------|-------|-------|---------|---------------------------|-------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person delivery | 38.41 | 16.24 | 16 | 68.65 | 37.72 | 19 | -30.24 [-48.97, -11.51] |

Wake after sleep onset

Table S97. Diary-determined WASO (minutes), post treatment differences, ISR vs. control

| Study | Delivery | ISR | | | Control | | | Mean Difference, [95% CI] |
|-------------|-----------------------|-------|-------|-------|---------|-------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person delivery | 60.71 | 59.01 | 16 | 80.31 | 57.38 | 19 | -19.60 [-58.35, 19.15] |

Sleep efficiency

Table S98. Diary-determined sleep efficiency (%), post treatment differences. ISR vs. control

| Study | Delivery | | ISR Control | | | | Mean Difference, [95% CI] | |
|-------------|-----------------------|-------|-------------|-------|-------|-------|---------------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person delivery | 79.85 | 8.84 | 16 | 68.24 | 14.14 | 18 | 11.61 [3.77, 19.45] |

Table S99. Actigraphy-determined sleep efficiency (%), post treatment differences, ISR vs. control

| Study | Delivery | | ISR | | | Control | Mean Difference, [95% CI] | |
|-------------|-----------------------|-------|-------|-------|-------|---------|---------------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person delivery | 76.57 | 11.91 | 16 | 71.92 | 11.91 | 18 | 4.65 [-3.37, 12.67] |

Total sleep time

Table \$100. Diary-determined total sleep time (min), post treatment differences, ISR vs. control

| Study | Delivery | | ISR | | Control | | | Mean Difference, [95% CI] |
|-------------|-----------------------|--------|-------|-------|---------|-------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person delivery | 403.23 | 55.37 | 16 | 350.26 | 76.76 | 18 | 52.97 [8.32, 97.62] |

Table S101. Actigraphy-determined total sleep time (min), post treatment differences, ISR vs. control

| Study | Delivery | | ISR | | Control | | | Mean Difference, [95% CI] |
|-------------|-----------------------|--------|-------|-------|---------|-------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Harris 2012 | In-person delivery | 392.28 | 62.54 | 16 | 368.5 | 72.74 | 18 | 23.78 [-21.70, 69.26] |

Table S102 – Summary of Findings table for ISR for the treatment of Psychological and Behavioral insomnia in adults

References: Harris 2012 (A)

| Outcomes [Tool] | Quality of the evidence | Absolute Difference | No of Participants (studies) |
|--------------------------|-------------------------|---|------------------------------|
| | (GRADE) | CBTI vs Control | |
| Quality of sleep | ⊕⊕⊜⊝ | The standardized mean difference in the ISR group was 0.76 points lower¹ [0.07 points to 1.45 points lower] compared to control | 35 patients |
| [PSQI] | LOW a,b | | (1 RCT) ^A |
| Sleep latency * | ⊕⊕⊜⊝ | The mean difference in the ISR group was 30.24 minutes lower¹ [11.51 min to 48.97 mins lower] compared to control | 35 patients |
| [Diary] | LOW a,b | | (1 RCT) ^A |
| Wake after sleep onset * | ⊕⊕⊜⊝ | The mean difference in the ISR group was 19.60 minutes lower ² [58.35 mins lower to 19.15 mins higher] compared to control | 35 patients |
| [Diary] | LOW a,b | | (1 RCT) ^A |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the ISR group was 11.61% higher¹ [3.77 to 19.45% higher] compared to control | 34 patients |
| [Diary] | LOW a,b | | (1 RCT) ^A |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the ISR group was 4.65% higher ² [3.37% lower to 12.67% higher] compared to control | 34 patients |
| [Actigraphy] | LOW a,b | | (1 RCT) ^A |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the ISR group was 52.97 minutes higher¹ [8.32 to 97.62 mins higher] compared to control | 34 patients |
| [Dairy] | L OW a,b | | (1 RCT) ^A |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the ISR group was 23.78 minutes higher¹ [21.70 mins lower to 69.26 mins higher] compared to control | 34 patients |
| [Actigraphy] | L OW a,b | | (1 RCT) ^A |

^{*} Critical Outcome

a 95% CI crosses clinical significance threshold and/or <200 participants
b Risk of bias [no patient blinding, allocation concealment]
1 Meets the clinical significance threshold

² Does not meet the clinical significance threshold

Mindfulness

Quality of sleep

Table \$103. PSQI-determined quality of sleep, post treatment differences, Mindfulness vs. control

| Study | Delivery | Mindfulness | | | | Control | Std. Mean Difference, | |
|------------|----------------|-------------|------|-------|-------|---------|-----------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Zhang 2015 | Group delivery | 8.17 | 2.61 | 30 | 11.47 | 3.58 | 30 | -1.04[-1.58, -0.50] |
| • | , , | | | | | | | |

Sleep latency

Table S104. Diary-determined sleep latency (mins), post treatment differences, Mindfulness vs. control

| Study | Delivery | Mindfulness | | | | Control | Mean Difference, [95% CI] | |
|-----------|----------------|-------------|------|-------|------|---------|---------------------------|----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Wong 2017 | Group delivery | 48.6 | 30.7 | 111 | 52.4 | 53.5 | 105 | -3.80[-15.52, 7.92] |
| | | | | | | | | |

Wake after sleep onset

Table S105. Diary-determined WASO (mins), post treatment differences, Mindfulness vs. control

| Study | Delivery | Mindfulness | | | | Control | | Mean Difference, [95% CI] |
|-----------|----------------|-------------|------|-------|------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Wong 2017 | Group delivery | 57.7 | 52.6 | 111 | 67.7 | 68.5 | 105 | -10.00[-26.35, 6.35] |

Remission rate

Table S106. ISI-determined remission rate (%), post treatment differences, Mindfulness vs. control

| Study | Delivery method | Mindful | ness | Control | | Risk Difference [95% CI] |
|----------|-----------------|---------|-------|---------|-------|--------------------------|
| | | Events | Total | Events | Total | |
| Ong 2014 | Group delivery | 8 | 19 | 1 | 16 | 0.36[0.11, 0.61] |
| | | | | | | |

Insomnia severity

Table S107. ISI-determined insomnia severity, post treatment differences, Mindfulness vs. control

| Study | Delivery | | Mindfulness | ; | | Control | | Std. Mean Difference, |
|-----------|--------------------------|-------|-------------|-------|------|---------|-------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | [95% CI] |
| Ong 2014 | Group delivery | 10.27 | 4.7 | 19 | 15.5 | 5.5 | 16 | -1.01[-1.72, -0.30] |
| Wong 2017 | In-person, one-on-one | 14.4 | 4 | 111 | 14.9 | 4.7 | 105 | -0.18[-0.45, 0.08] |

Sleep efficiency

Table S108. Diary-determined sleep efficiency (%), post treatment differences, Mindfulness vs. control

| Study | Delivery | | Mindfulness | | | Control | | Mean Difference, [95% CI] |
|-----------|--------------------------|-------|-------------|-------|-------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 83.79 | 8.22 | 19 | 80.76 | 13.6 | 16 | 3.03[-4.59, 10.65] |
| Wong 2017 | In-person, one-on-one | 68.5 | 14.1 | 111 | 68.4 | 16.3 | 105 | 0.10[-3.97, 4.17] |

Table S109. Actigraphy-determined sleep efficiency (%), post treatment differences, Mindfulness vs. control

| Study | Delivery | | Mindfulness | 3 | | Control | Mean Difference, [95% CI] | |
|----------|----------------|-------|-------------|-------|-------|---------|---------------------------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 81.78 | 8.95 | 19 | 83.53 | 4.88 | 16 | -1.75[-6.43, 2.93] |
| - | | | | | | | | |

Table S110. PSG-determined sleep efficiency (%), post treatment differences. Mindfulness vs. control

| Study | Delivery | | Mindfulness | ; | | Control | Mean Difference, [95% CI] | |
|----------|----------------|-------|-------------|-------|-------|---------|---------------------------|--------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 83.24 | 10.71 | 19 | 85.19 | 6.79 | 16 | -1.95[-7.80, 3.90] |
| | | | | | | | | |

Total wake time

Table S111. Diary-determined total wake time (mins), post treatment differences, Mindfulness vs. control

| Study | Delivery | Mindfulness | | | | Control | Mean Difference, [95% CI] | |
|----------|----------------|-------------|-------|-------|-------|---------|---------------------------|-----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 73.47 | 34.69 | 19 | 85.71 | 72.08 | 16 | -12.24[-50.85, 26.37] |
| | | | | , | | | | |

Table S112. Actigraphy-determined total wake time (mins), post treatment differences, Mindfulness vs. control

| Study | Delivery | | Mindfulness | | | Control | Mean Difference, [95% CI] | |
|----------|----------------|-------|-------------|-------|-------|---------|---------------------------|----------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 61.46 | 25.15 | 19 | 61.44 | 22.48 | 16 | 0.02[-15.77, 15.81] |
| | | | | | | | | |

Table S113. PSG-determined total wake time (mins), post treatment differences. Mindfulness vs. control

| Study | Delivery | Mindfulness | | | | Control | Mean Difference, [95% CI] | |
|----------|----------------|-------------|-------|-------|-------|---------|---------------------------|---------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 78.01 | 53.93 | 19 | 69.81 | 30.94 | 16 | 8.20[-20.40, 36.80] |
| | | | | | | | | |

Total sleep time

Table S114. Diary-determined total sleep time (mins), post treatment differences, Mindfulness vs. control

| Study | Delivery | | Mindfulness Control | | | | | Mean Difference, [95% CI] |
|-----------|--------------------------|--------|---------------------|-------|--------|-------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 379.31 | 64.32 | 19 | 364.82 | 83.13 | 16 | 14.49[-35.47,64.45] |
| Wong 2017 | In-person, one-on-one | 318.4 | 66.2 | 111 | 317.1 | 76.6 | 105 | 1.30[-17.84, 20.44] |

Table S115. Actigraphy-determined total sleep time (mins), post treatment differences, Mindfulness vs. control

| Study | Delivery | Mindfulness | | | | Control | | Mean Difference, [95% CI] |
|----------|----------------|-------------|-------|-------|--------|---------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 364.85 | 47.68 | 19 | 376.58 | 63.03 | 16 | -11.73[-49.33, 25.87] |

Table S116. PSG-determined total sleep time (mins), post treatment differences, Mindfulness vs. control

| Study | Delivery | Mindfulness | | | Control | | | Mean Difference, [95% CI] |
|----------|----------------|-------------|-------|-------|---------|-------|-------|---------------------------|
| | method | Mean | SD | Total | Mean | SD | Total | |
| Ong 2014 | Group delivery | 380.84 | 52.25 | 19 | 403.66 | 39.94 | 16 | -22.82[-53.40, 7.76] |

Table S117 – Summary of Findings table for Mindfulness for the treatment of Psychological and Behavioral insomnia in adults

References: Zhang 2015 (A); Ong 2014 (B), Wong 2017 (C)

| Outcomes [Tool] | Quality of the evidence (GRADE) | Absolute Difference CBTI vs Control | No of Participants (studies) |
|-------------------------|---------------------------------------|---|------------------------------|
| Quality of sleep | ⊕⊕⊜⊝ | The standardized mean difference in the Mindfulness group was 1.04 points lower ¹ [0.50 to 1.58 points lower] compared to control | 60 patients |
| [PSQI] | L OW a,b | | (1 RCT) ^A |
| *Sleep latency | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 3.80 mins lower ² [15.52 mins lower to 7.92 mins higher] compared to control | 216patients |
| [Diary] | LOW b,c | | (1 RCT) ^c |
| Wake after sleep onset | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 10.00 mins lower ² [26.35 mins lower to 6.35 mins higher] compared to control | 216patients |
| [Diary] | L OW b,c | | (1 RCT) ^C |
| *Remission rate | ⊕⊕⊜⊝ | The percentage of patients achieving "remission" in the CBTI group was 36% higher¹ [11% to 61% higher] compared to control | 35 patients |
| [ISI] | L OW a,b | | (1 RCT) ^B |
| Insomnia severity | ⊕⊕⊜⊝ | The standardized mean difference in the mindfulness group was 0.53 points lower¹ [1.32 points lower to 0.27 points higher] compared to control | 251 patients |
| [ISI] | L OW a,b,c | | (2 RCT) ^{B,C} |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 0.75% higher ² [2.84% lower to 4.34% higher] compared to control | 251 patients |
| [Diary] | LOW a,b,c | | (2 RCT) B,C |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 1.75% lower ² [6.43% lower to 2.93% higher] compared to control | 35 patients |
| [Act] | L OW a,b,c | | (1 RCT) ^B |
| Sleep efficiency | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 1.95% lower ² [7.8% lower to 3.9% higher] compared to control | 35 patients |
| [PSG] | L OW a,b,c | | (1 RCT) ^B |
| Total wake time | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 12.24 minutes lower ² [50.85 minutes lower to 26.37 minutes higher] compared to control | 35 patients |
| Diary] | L OW a,b,c | | (1 RCT) ^B |
| Fotal wake time | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 0.02 minutes lower ² [15.77 minutes lower to 15.81 minutes higher] compared to control | 35 patients |
| Act] | L OW a,b,c | | (1 RCT) ^B |
| Fotal wake time | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 8.2 minutes lower ² [20.40 minutes lower to 36.80 minutes higher] compared to control | 35 patients |
| PSG] | L OW a,b,c | | (1 RCT) ^B |
| Fotal sleep time | ⊕⊜⊜ | The mean difference in the Mindfulness group was 2.99 minutes higher ² [14.88 minutes lower to 20.86 minutes higher] compared to control | 251 patients |
| Diary] | VERY LOW a,b,c,d | | (2 RCT) ^{B,C} |
| Total sleep time | ⊕⊜⊜ | The mean difference in the Mindfulness group was 11.73 minutes lower ² [49.33 minutes lower to 25.87 minutes higher] compared to control | 35 patients |
| Act] | VERY LOW a,b,c,d | | (1 RCT) ^B |
| Total sleep time | ⊕⊕⊜⊝ | The mean difference in the Mindfulness group was 22.82 minutes lower ² [53.40 minutes lower to 7.76 minutes higher] compared to control | 35 patients |
| [PSG] | L OW a,b,c | | (1 RCT) ^B |

^{*} Critical Outcome

a. <200 participants

b. Risk of bias [no patient blinding, allocation concealment]

c. Imprecision

^a Crosses CI on both sides

¹ Meets the clinical significance threshold

² Does not meet the clinical significance threshold