

Can CBT for insomnia also improve pain sensitivity in fibromyalgia patients?: results from a randomized clinical trial

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• **Abstract**

Introduction

Recent studies support the notion that cognitive behavioral therapy for insomnia (CBT) may be effective among insomnia patients who have comorbid pain disorders. Several studies have also shown that sleep deprivation among healthy subjects is hyperalgesic and results in enhanced pain sensitivity. Taken together, these findings lead to the question as to whether sleep improvements resulting from CBT help reduce the pain of patients with chronic pain disorders. This study used a mediation analysis to formally test the hypothesis that CBT exerts a positive effect on pain intensity through an improvement of insomnia in a sample of patients with fibromyalgia (FM).

Materials and methods

Sixty-one individuals (59 women; ages 24–65) meeting research diagnostic criteria for insomnia and the American College of Rheumatology diagnostic criteria for FM were randomized to three treatment conditions: treatment as usual (TAU; $n = 21$), TAU + quasi-desensitization sham therapy (ST; $n = 20$), or TAU + CBT ($n = 20$). TAU comprised lifestyle suggestions and medication management provided during 2 visits within the 8-week treatment phase. CBT and the ST were delivered during 4 biweekly sessions. Participants were assessed at baseline, at posttreatment and 6 months later. The primary sleep outcome for this study was the score on the Insomnia Severity Index (ISI) at posttreatment. The Manual Tender Point Survey (MTPS) was used to evaluate pain. This is a standardized method to assess the intensity of pain (rated on a 0–10 scale) by pressure in 18 tender points. Total scores on the MTPS can range from 0 to 180 points, with higher scores indicating worse pain. Scores on the MTPS at posttreatment and at 6-month follow-up were used herein. We used the mediation model with bootstrapping analysis from Preacher and Hayes (2004) to explore whether exposure to CBT has a beneficial effect on pain through insomnia improvement.

Results

When compared to TAU, individuals receiving CBT showed statistically significant lower insomnia scores at posttreatment ($p = .006$). Furthermore, individuals with lower insomnia scores tended to show lower pain intensity, even after controlling for whether or not they received CBT ($p = .02$). We also found a statistically significant indirect effect of

CBT on pain at posttreatment occurring through insomnia improvement (point estimate of -15.22 ; 95% bias-corrected bootstrap confidence interval = -33.20 to -1.70). Similarly, we found a statistically significant indirect effect of CBT on pain scores at 6-month follow-up (indirect effect point estimate = -14.02 ; 95% bias-corrected bootstrap confidence interval = -31.01 to -0.57). Although the group of subjects receiving the ST showed statistically lower scores on the ISI at posttreatment, when compared to the TAU group ($p = .03$), we found no significant effect of ST on pain through sleep at posttreatment or follow-up.

Conclusion

These results are consistent with the hypothesis that exposure to CBT in individuals with FM improves insomnia which, in turn, lowers the intensity of pain. Beneficial effects of CBT on pain via insomnia improvement at posttreatment were also present at 6-month follow-up, well beyond the time point when formal treatment was complete. The findings support the notion that disturbed sleep is related to pain perception and underscore the usefulness of CBT for the overall management of FM symptoms.

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