

## Abstract

*Objective:* To examine if the severity of depressive symptoms, sleep and circadian dysfunctions, anxiety symptoms, and daytime functioning can be improved by Transdiagnostic Sleep and Circadian Treatment (TranS-C).

*Method:* Adults with major depressive disorder (MDD) and sleep and circadian dysfunction (N = 152) were randomly assigned to the TranS-C intervention group (N = 77) or the care as usual group (CAU; n = 75). CAU continued to receive usual care when participants in TranS-C group received 2-hours group sessions for 6 consecutive weeks. Major elements of TranS-C included psychoeducation of sleep, sleep hygiene, rise-up and wind-down routine, stimulus control, sleep restriction, cognitive distortions and restructuring, diaphragmatic breathing techniques, and progressive muscle relaxation. Assessments were completed at baseline (week 0), 1-week posttreatment (week 7), and 3-month follow up.

*Results:* Statistical analysis following the intention-to-treat approach demonstrated that depressive symptoms ( $d = 0.76$ ,  $p = .002$ ), sleep and circadian functioning ( $d = 0.12$  to  $0.77$ ,  $p < .01$ ), and anxiety symptoms ( $d = 0.67$ ,  $p = .004$ ) significantly improved in TranS-C relative to CAU from baseline to 1-week posttreatment. These effects were maintained at 3-month follow up ( $d = 0.18$  to  $1.14$ ,  $p < .01$ ) while TranS-C improved the daytime functioning from baseline to 3-month follow up ( $d = 0.57$ ,  $p = .014$ ) only, relative to CAU.

*Conclusion:* This is the first study demonstrating that TranS-C is an effective treatment for people with comorbidity of MDD and sleep and circadian dysfunction to alleviate the depressive symptoms, sleep and circadian functioning, anxiety symptoms, and daytime functioning. Future research could replicate the findings with more objective measurements and a longer maintenance period.