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HerbClip™

File: ■ Lavender (*Lavandula angustifolia*, Lamiaceae)
■ Sleep Dysfunction

HC 121632-571

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RE: Inhaled Lavender Therapy Improves Well-being and Sleep Quality in College Students

Lillehei AS, Halcón L, Gross CR, Savik K, Reis R. Well-being and self-assessment of change: secondary analysis of an RCT that demonstrated benefit of inhaled lavender and sleep hygiene in college students with sleep problems. *Explore (NY)*. November-December 2016;12(6):427-435.

Sleep dysfunction can affect an individual's immune system, cognition, mood, alertness, energy, health, daytime functioning, and safety, negatively impacting the overall sense of physical and psychological well-being. Treatments for sleep problems include sedatives, hypnotics, over-the-counter medications, herbs, behavioral and cognitive techniques, and sleep restriction. A promising therapy for well-being and sleep is the use of essential oils or aromatherapy, the mechanism for which is thought to be multifaceted and involve specific circulatory and neurochemical pathways. Lavender (*Lavandula angustifolia*, Lamiaceae) essential oil is among those frequently used for general health and well-being. These authors conducted a secondary analysis of a randomized controlled trial (RCT) with a parallel-group design in which one group received a lavender inhalation patch and practiced sleep hygiene (lavender sleep hygiene, LSH) and the other group received a placebo inhalation patch and practiced sleep hygiene (SH) for 5 consecutive nights. Each 3-cm adhesive patch contained a 1-cm disc of absorbent material impregnated with 55 µL lavender oil (supplied by Wyndmere Naturals, Inc.; New Hope, Minnesota) or left blank (placebo). Based on the gas chromatography-mass spectrometry (GC-MS) analysis provided to the principal investigator, "The essential oil used was chemically consistent with the International Organization for Standardization (ISO) for *L. angustifolia*." The patch (supplied by Bioesse Technologies, LLC; Minnetonka, Minnesota) had a skin-barrier backing to prevent skin absorption of the essential oil and a time-release function to last 6-8 hours.

The authors sought to investigate the impact of LSH compared with SH alone on well-being as measured by the Self-Assessment of Change (SAC) at post-intervention and at a 2-week follow-up, and also to compare the SAC results to results from the standardized sleep surveys Pittsburgh Sleep Quality Index (PSQI) and Patient-Reported Outcomes Measurement Information System Sleep Disturbance Short Form 8b (PROMIS SD SF8b).

The primary hypothesis of the original RCT,[1] conducted at the University of Minnesota in Minneapolis, Minnesota, was that the subjects using LSH would report better sleep outcomes at post-treatment and at follow-up than those using only SH as measured on personal tracker devices, in sleep diaries, and on standardized scales measuring sleep quantity and quality. This article reports on the findings related to the study's secondary hypothesis, the impact of the intervention on the subjects' well-being measured on the SAC.

Seventy-nine students with self-reported sleep issues met the inclusion criteria and were assigned to either the LSH group (n = 39) or the SH group (n = 40). Sleep issues were defined as difficulty falling asleep, frequent awakening during the night, or daytime sleepiness. The SAC was completed at post-intervention and at a 2-week follow-up. The PSQI and the PROMIS SD SF8b were completed at baseline, at post-intervention, and at the 2-week follow-up. Two-thirds of the 79 subjects were female; average age of the subjects was 21.6 years. The 2 groups were demographically similar except for race, with the differing rates in the LSH and SH groups, respectively, being 0% and 5% black or African-American, 33% and 10% Asian, and 0% and 2% American Indian or Alaskan Native.

The authors' exploratory analyses showed a significant improvement from baseline to post-intervention for the LSH group on several SAC measures, including sleep (P = 0.01), energy (P = 0.03), and vibrancy (P = 0.05), with calm being close to significant (P = 0.06). At follow-up, the only significant measure was "being less defined by their problem" (P = 0.05). Analyses also revealed an overall positive trend for between-group differences favoring the LSH group on well-being, with a higher trend for each assessment period. Between-group differences in sleep (P = 0.013), energy (P = 0.027), and vibrancy (P = 0.049) post-intervention were significant, with greater improvements in the LSH group compared with the SH group.

The original RCT found significant between-group differences for better sleep quality on both the PSQI and the PROMIS SD SF8b at both post-intervention and follow-up. In the analyses reported here, the SAC findings for sleep and well-being showed the same improvements as the findings reported on the PSQI and PROMIS SD SF8b. At follow-up, a significant difference in improved sleep quality between groups was demonstrated on all 3 assessment tools; the LSH group was associated with significantly better scores for sleeping well (P = 0.02).

Among the limitations pointed out by the authors is the fact that generalizability of the results is limited to similar populations of college students. Also, the retrospective pretest format introduces a subject's desire to show an effect and introduces recall bias into the study design, which could be less convincing than other approaches such as those using pre- and posttests. Few reports exist to support using the SAC, a retrospective pretest format, as a repeat measure for follow-up. All outcome measures were self-reported, which opens the possibility of self-report bias.

In this study, inhaled lavender improved well-being and sleep problems in college students, and the findings measured on the SAC were consistent with those on standardized sleep surveys. "This study has implications for the use of inhaled lavender for sleep and well-being in patient/client care, as well as the use of the SAC to evaluate multiple dimensions of well-being of a whole systems integrative therapy, and complex systems like sleep," conclude the authors.

The study was supported in part by Wyndmere Naturals, Inc., and Bioesse Technologies, LLC; the funders had no role in the design or conduct of the study.

—*Shari Henson*

Reference

[1]Oliff HS. Lavender aromatherapy improves sleep quality in college students. *HerbClip*. February 15, 2016 (No. 081553-538). Austin, TX: American Botanical Council. Review of Effect of inhaled lavender and sleep hygiene on self-reported sleep issues: A randomized controlled trial by Lillehei AS, Halcón LL, Savik K, Reis R. *J Altern Complement Med*. 2015;21(7):430-438.

The American Botanical Council has chosen not to reprint the original article.