

Tailored Lighting Intervention for Persons with Dementia and Caregivers Living at Home

Light therapy has shown promise as a nonpharmacological treatment to help regulate abnormal sleep-wake patterns and associated behavioral issues prevalent among individuals diagnosed with Alzheimer's disease and related dementias (ADRD). Previously, LRC researchers showed that a tailored lighting intervention, designed to increase circadian stimulation during the day using light sources that have high short-wavelength content and high light output, improves sleep and behavior in ADRD patients living in long-term care facilities. In the present study, the LRC investigated whether the same lighting intervention could improve sleep and behavior in persons with ADRD and caregivers living at home.

Methods

Thirty-five persons with ADRD and 34 caregivers completed the 11-week study. During week 1, subjective questionnaires were administered to the study participants. During week 2, baseline data were collected using the Daysimeter and actigraph. Researchers installed the lighting

Sponsor

National Institute on Aging
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Equipment Donation

GE Lighting (lamps and ballasts)

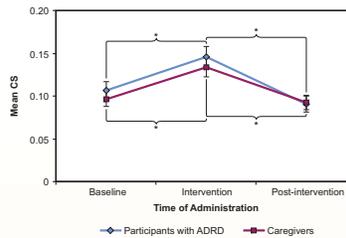


Figure 1. Circadian stimulus (CS) rose significantly for both the participants with ADRD and the caregivers during the intervention phase. As expected, it fell to near baseline levels after the intervention ceased. Error bars represent standard error of the mean. * = statistical significance

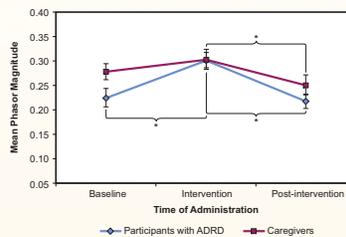


Figure 2. Phasor magnitude was significantly affected for both the participants with ADRD and the caregivers. Error bars represent standard error of the mean. * = statistical significance

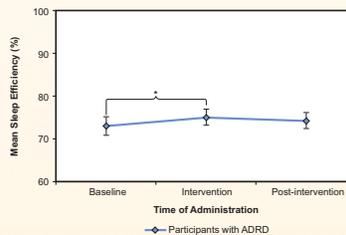


Figure 3. For the participants with ADRD, sleep efficiency showed a slight rise, as expected, during the intervention phase. Error bars represent standard error of the mean. * = statistical significance

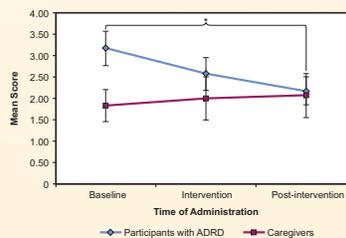


Figure 4. The Geriatric Depression Scale scores of the participants with ADRD fell over the course of the study, indicating less depression. The difference between baseline and post-intervention was significant. Error bars represent standard error of the mean. * = statistical significance

during week 3, followed by 4 weeks of the tailored lighting intervention. During the last week of the lighting intervention, Daysimeter, actigraph, and questionnaire data were again collected. Three weeks after the lighting intervention was removed, a third data collection (post-intervention assessment) was performed.

Results

The lighting intervention significantly increased circadian stimulus (CS; Figure 1) and circadian entrainment, as measured by phasor magnitude (Figure 2) and significantly increased sleep efficiency, as measured by actigraphy data (Figure 3); symptoms of depression were significantly reduced in the participants with ADRD (Figure 4).

Conclusions

Although the magnitude of the effect of the lighting intervention in sleep and behavior of those living at home was smaller than of those living in more controlled environments, the tailored lighting intervention was still effective at increasing sleep and improving depression in persons with ADRD living at home.

Citation

Figueiro MG, Hunter CM, Higgins P, Hornick T, Jones GE, Plitnick B, Brons J, Rea MS. 2015. Tailored lighting intervention for persons with dementia and caregivers living at home. *Sleep Health: Journal of the National Sleep Foundation*. In Press.

