

Tailored Light Treatment Improves Dementia Symptomatic Behavior

Persons with Alzheimer's disease and related dementias (ADRD) are often difficult for family caregivers to manage because of sleep problems, nocturnal wandering, and associated daytime irritability. The present study was designed to test the effectiveness of a tailored light treatment on sleep quality, agitation and depression in those with ADRD living in nursing homes.



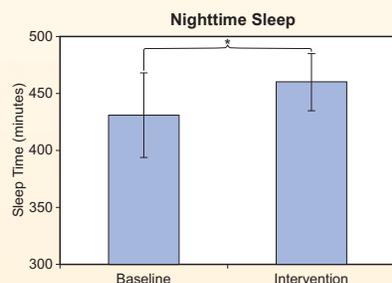
Results

Exposure to the tailored light treatment significantly increased sleep time, sleep efficiency, and phasor magnitude, consistent with an increase in circadian entrainment. Light exposure significantly reduced depression and

agitation. Total sleep time and sleep efficiency were also significantly greater after light intervention.

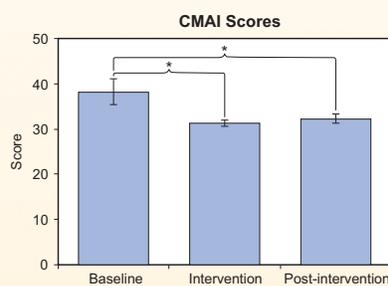
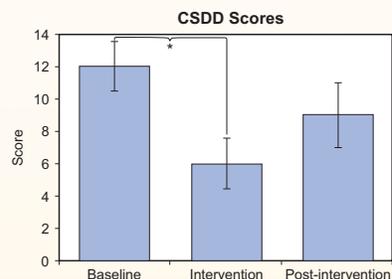
Methods

Custom luminaires were built for this study using parts currently available on the market, and were installed in 14 nursing home residents' rooms for a period of four weeks. The luminaires delivered high circadian stimulation to the residents during daytime hours, via low levels (300–400 lux at the cornea) of a bluish-white light source (correlated color temperature > 9000 K). Objective outcome measures included sleep, rest/activity patterns, and circadian disruption; subjective outcome measures included sleep quality, depression, agitation, and activities of daily living. Data were collected prior to the lighting intervention installation, at the end of the four-week intervention, and four weeks after the intervention was removed (except for objective measures).



Mean \pm S.E.M. total sleep time (in minutes) was 431 ± 37 at baseline and 460 ± 25 after intervention. Sleep time measured from Daysimeter data after lighting intervention was significantly longer than after baseline ($p = 0.03$).

Mean \pm S.E.M. Cornell Scale for Depression in Dementia (CSDD) scores were 12.0 ± 1.5 at baseline, 6.0 ± 1.6 after intervention, and 9.0 ± 2.0 post-intervention. A significantly higher depression score was observed after baseline than after the lighting intervention period ($p = 0.03$). Higher scores are associated with greater self-report of depression.



Mean \pm S.E.M. Cohen-Mansfield Agitation Inventory (CMAI) scores were 38.2 ± 2.8 at baseline, 31.2 ± 0.7 after intervention, and 32.3 ± 1.1 post-intervention. A significant higher CMAI score was observed after baseline than after the lighting intervention ($p = 0.037$) and the post-intervention ($p = 0.03$) periods. A higher CMAI is associated with greater agitation.

Conclusion

A light treatment tailored to increase circadian stimulation during the day can be used to increase quality of life in those with ADRD.

Publication

Figureiro MG, Plitnick BA, Lok A, et al. 2014. Tailored lighting intervention improves measures of sleep, depression and agitation in persons with Alzheimer's disease and related dementia living in long-term care facilities. *Clinical Interventions in Aging*, 9:1527-1537

Sponsor

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Product donation

GE Lighting

