SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

This study examines the effect and duration of effect of timed light on sleep, rest-activity, and global function in women with Alzheimer's disease.

Qualitative Analysis of Therapeutic Light Effects on Global Function in Alzheimer's Disease

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Key Concepts/Context

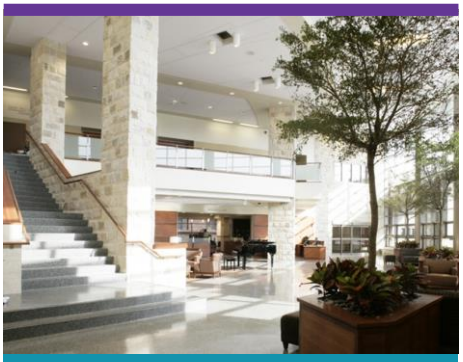
The occurrence of Alzheimer's disease (AD) is growing, with 68% of cases occurring in women. In addition to declines in global function, patients with AD experience reversal of day-night patterns, disturbed sleep-wake rhythms, and excessive daytime sleepiness, making managing AD difficult. Symptom management includes pharmacologic measures, environmental or milieu management, and behavioral interventions. Light therapy is a highly promising treatment alternative for AD because it is easy to deliver and has minimal side effects. Environmental light is thought to be a powerful component in regulating core body temperature, which entrains the day-night cycle, and the sleep-wake cycle itself.

Methods

Twenty women with AD were randomized to experimental or control conditions. The women wore a cap visor in the morning that emitted blue-green (BGL) or dim red light (DRL).

Findings

In reviewing the findings from this study, perceived effects from light reception emerged, with differing results depending on the color of light the participant received. As experienced by their caregivers, participants who received BGL were perceived to be more awake and alert and more verbally competent, and to have improved recognition and recollection. They were also perceived to recapture their personality to some extent and to engage more fully in their environment, and to have better motor coordination and improved mood. Serendipitously, in examining the data from the caregiver interviews of the participants who received DRL, changes were perceived that were distinctly different from those perceived in the



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BGL group. The participants who received DRL were perceived as more calm, with reduced resistance to care.

Design Implications

The use of therapeutic light to treat these symptoms in individuals who have AD shows potential as a method by which to delay institutionalization and improve the time envelope of independence at home. These are outcomes that are sought after by families of individuals with AD as well as the healthcare system at large. In keeping with this line of thinking, it is possible that the use of therapeutic light could be used in any healthcare setting.

Limitations

The authors noted several limitations. As a first instance, the small sample size could be viewed as a limitation; however, it was large enough for interviews to reach saturation with respect to thematic content, confirmation of themes, and emerging categories. In addition, it should be noted that the cohort of caregivers interviewed was by study design predetermined through their role association as caregivers for the light recipients; thus, no sample criteria were used to select the caregiver cohort.

Another limitation was the fact that the placebo used may not have been appropriate in this study. Appropriateness of placebos is dependent on the variables under examination. Because the incidence of dementia and depression go hand in hand, further research into what constitutes a true placebo in this cohort is needed. In this study where the color of light was visible to participants and caregivers, the question arises as to whether the participants and caregivers were truly blinded. They were able to observe which color light was administered, thereby potentially influencing the caregivers' responses during interviews if they were savvy enough to seek resources (i.e., Internet sites, library information, etc.) that could potentially help them learn which light color might be therapeutic. In addition, although the experimental and control groups exhibited different changes with respect to the themes that emerged, the possibility exists that perhaps staff and caregivers were deliberately looking for changes, thereby influencing their interpretation of behavior improvement. This additional knowledge would help to ensure that appropriate placebos are used. Lastly, the study would have been strengthened by using quantitative measures in order to statistically examine the effect of light on global function, in addition to examining the effect of light on global function qualitatively through the use of interviews.