Methodology Issues in a Tailored Light Treatment for Persons with Dementia

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Country

USA

Title of project or programme

Methodology Issues in a Tailored Light Treatment for Persons with Dementia

Source of funding information

NIH (NIA)

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01/07/2009

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7

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Behavioral and Social Science... Brain Disorders... Caregiving Research... Clinical Research... Clinical Research - Extramural... Dementia... Depression... Health Services... Mental Health... Neurodegenerative... Neurosciences... Sleep Research

Research Abstract
DESCRIPTION (provided by applicant): As Alzheimer’s disease and related dementia (ADRD) progresses, families are often forced to move their loved ones from home to assisted living facilities or nursing homes. Often, the precipitating factor is disturbed sleep- wake (circadian) cycles, where the person with ADRD is awake at night, causing stress and fatigue to family caregivers. Light therapy has shown great promise as a nonpharmacological treatment in helping regulate sleep in ADRD and in improving cognition. Studies have demonstrated that daytime light exposure can consolidate and increase nighttime sleep efficiency, while increasing daytime wakefulness and reducing evening agitation. More importantly, light exposure during the day has been shown to improve memory in ADRD patients. In our current grant activities, with the goal of increasing the efficacy and acceptability of the treatment, we have developed field measurement methodologies for obtaining accurate circadian light-dark exposures and activity-rest patterns in those with ADRD using the “”Dimesimeter””, a portable, precisely calibrated “”dime-sized”” device that records circadian (and visual) light continuously as well as activity for several days or weeks (Aim 1). We have also demonstrated the acceptability of the device by those with ADRD (Aim 2) and we have completed data collection for 56 patients with ADRD and 53 caregivers on the effectiveness of a practical but scientifically sophisticated day-night lighting system designed to improve entrainment to the solar day and improve sleep quality in persons with ADRD and their caregivers living in the home environment (Aim 3). The circadian system is maximally sensitive to short-wavelength (peak close to 460 nm) light. Our research team has shown that 470-nm (blue) light presented in the early evening can consolidate and increase sleep efficiency in assisted living facility residents diagnosed with mild to moderate symptoms of ADRD. Current grant activities indicate that lower levels (300-400 lux at the cornea) of bluish- white light installed in people’s homes can significantly improve sleep and reduce depression in ADRD patients. Additional pilot work performed under the grant indicates that the same lighting system increased sleep efficiency, decreased agitation and decreased depression in ADRD patients living in nursing homes. In this competing renewal, we propose to extend the grant work activities and investigate the impact of short- (i.e., 4 weeks) and long-term (i.e., 6 months) exposures to a tailored daytime lighting intervention on agitation, cognition, nighttime sleep measures, and quality of life of those with ADRD living in assisted living and nursing home settings. By combining spectrum and light level, we will effectively stimulate the circadian system without increasing energy costs. We will also investigate the most effective way to deliver the light in these settings and inform manufacturers that can develop new lighting products for this application. Data from these studies can help overcome barriers to the adoption of light as a nonpharmacological intervention to improve sleep and behavior in those with ADRD living in more controlled environments.

Lay Summary
PUBLIC HEALTH RELEVANCE: Data suggest that, of more than 10 million Alzheimer’s disease and related dementia (ADRD) and their caregivers, about one-third of the patients and two-thirds of the caregivers have trouble sleeping. Often the person with ADRD is awake at night,

causing tremendous stress and fatigue to caregivers. The proposed studies will extend finding from the current grant activities and investigate if the positive effects a tailored lightig treatment observed in ADRD patients living at home can also improve sleep and reduce agitation in those living in assisted living and nursing homes. The findings from these studies will be translated into new lighting products that can be used to effectively treat sleep disorders in those with ADRD.

Further information available at:

Types:
Investments > €500k

Member States:
United States of America

Diseases:
Alzheimer's disease & other dementias

Years:
2016

Database Categories:
N/A

Database Tags:
N/A