



## KEY POINT SUMMARY

### OBJECTIVES

The main purpose of this study is to standardize the approach for future research studies testing the effectiveness of bright light therapy as a treatment of sleep disorders in the institutionalized geriatric patient presenting with dementia.

### DESIGN IMPLICATIONS

Should future studies provide persuasive results promoting the use of bright light therapy for treating residents with dementia and sleep disorders, this would influence the design of long-term resident facilities. Designing the building to maximize the resident's exposure to natural lighting and placing special bright lights in wall- and ceiling-mounted fixtures would provide a therapeutic environment.

## Methodological challenges in studies in bright light therapy to treat sleep disorders in nursing home residents with dementia

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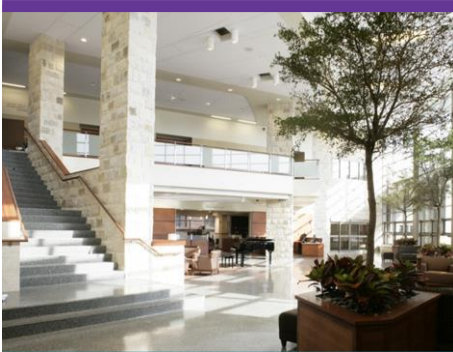
### Key Concepts/Context

Research studies conducted in the past 20 years have failed to validate the effectiveness of bright white light treatment of sleep disorders in nursing home or long-stay hospital residents with dementia. This trend is documented in a Cochrane Collaboration meta-analysis of 10 selected studies where problems in the research methodologies were identified. The prevalence of sleep disorders among residents diagnosed with dementia varies from 40% to 70%. Determination of the efficacy of this treatment is desirable as positive findings offer an intervention to improve the quality of life in these individuals. Based on the authors' clinical and research experience coupled with a literature review, they established guidelines with specific research design features. In hopes of enhancing researchers' chances to detect the benefits of phototherapy for sleep disorders in people with dementia, eight total strategies were recommended. These strategies were then applied to a literature review of 18 published studies to seek a more reliable understanding of the research outcomes.

### Methods

Initial steps of the study were to assemble a list of recommendations for future study design features believed to improve the chances of measuring the effect of bright light therapy. A total of eight items were proposed and covered specifics related to selection of study participants, treatment design features, and outcome measures.

Current interest has focused on nursing home residents with dementia, as there is a strong association with sleep and behavioral disorders. For this reason, residents confirmed with a diagnosis of dementia and a sleep disorder would be selected as participants. In order to establish a constant for the numerous studies, dementia



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and sleep disorder is further defined within their proposal. To ensure the retina receives the bright light as intended by the treatment, ophthalmic abnormalities must be identified and serve as exclusion criteria. Due to the sedative effects of antipsychotics, antidepressants, and benzodiazepines, residents taking these medications are excluded.

Phototherapy should increase the amount of available light above that of the resident's environmental baseline lighting. Parameters were therefore included in the proposals to address measuring light levels and amount of time for treatment. To eliminate the potential for error in outcomes, surveillance and control conditions were stated. The final proposal identified a standard measurement to assess sleeping patterns.

To promote further exploration and improved consistency of methodologies, these strategies were compared to approaches of existing studies. The experimental studies selected from PubMed and EMBASE literature databases had to meet six criteria. Eighteen studies from five countries were included in the meta-analysis documenting variances to the proposed methodology and the outcomes.

### Findings

The analysis resulted in limited evidence that bright lighting improves sleep, but was too contradictory to declare the benefits of the treatment. Studies in which five or more of the eight proposed strategies were met had conflicting results: three reported improvements in rest-activity patterns and two had negative results.

### Limitations

The study cannot demonstrate that their eight methodological proposals will increase the probability of determining a reliable treatment effect.

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