



## KEY POINT SUMMARY

### OBJECTIVES

The objective of this study was to test the impact of a multidimensional, non-pharmacological intervention on abnormal sleep/wake patterns in nursing home residents.

## Randomized, Controlled Trial of a Nonpharmacological Intervention to Improve Abnormal Sleep/Wake Patterns in Nursing Home Residents

Alessi, C.A., Martin, J.L., Webber, A.P., Kim, E.C., Harker, J.O., Josephson, K.R., 2005 | *Journal of the American Geriatrics Society*. Volume 53, Issue 5, Pages 803-810

### Key Concepts/Context

Sleep disturbance, common in older adults living in the community, is even more prevalent in long-stay nursing home residents. Studies suggest that non-pharmacological interventions such as timed exposure to bright light, increased physical activity, or decreased nighttime noise and light levels can be an alternative approaches for improving sleep patterns in nursing home residents.

This study examines the effectiveness of a multidimensional, non-pharmacological intervention in improving sleep patterns in nursing home residents with daytime sleepiness and nighttime sleep impairment. Specific research questions were as follows: whether the intervention would lead to decreased daytime sleep, increased nighttime sleep, and improvement in observable characteristics of quality of life, including increased participation in activities and social interaction.

### Methods

This randomized, controlled trial evaluated a multi-dimensional, non-pharmacological intervention that consisted of several components as follows: 1) five consecutive days and nights of efforts to decrease daytime in-bed time, 30 minutes or more of daily sunlight exposure, increased physical activity, structured bedtime routine, and efforts to decrease nighttime noise and light.

Some 188 residents were recruited from four community nursing homes in the Los Angeles area. All participants underwent three consecutive days (72 h) of wrist actigraphy, behavioral observations, and bedside noise and light monitoring at baseline. This was repeated at follow-up testing under usual-care conditions (control group) or with the intervention in place (intervention group; final three



days of intervention). After baseline assessment, participants were randomly allocated to intervention or control groups within each site using a random sequence, without blocking or stratification.

Study variables 1: Nighttime sleep (sleep/wake estimates) and daytime light exposure were measured, using Actillum wrist actigraphs (AMI) at baseline and follow-up testing.

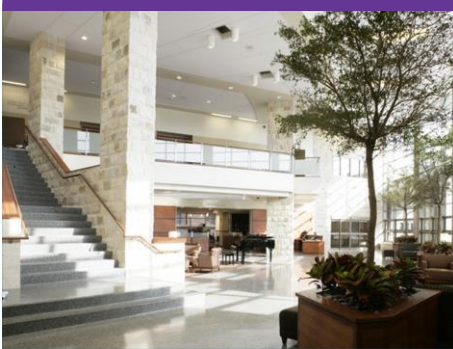
Study variables 2: Various resident behaviors were documented, using structured behavioral observations performed at baseline and follow-up every 15 minutes from 6:00 a.m. to 10:00 p.m. and every hour from 10:00 p.m. to 6:00 a.m. for 72 consecutive hours. Observed behaviors included in bed versus out of bed, sleep versus awake, participation in activities, participation in social conversation, agitation, and the level of assistance being provided by nursing staff (0 = no assistance required/fully independent, 1 = some assistance required, 2 = completely dependent).

Study variables 3: Noise and light levels in participants' rooms at night were measured using bedside monitors (Augmentech, Inc., Pittsburgh, PA) placed on a bedside dresser for 72 hours at baseline and follow-up.

Data were analyzed using SPSS 10.1 statistical software (SPSS Inc., Chicago, IL) for all randomized participants in an intent-to-treat analysis.

## Findings

- The multi-dimensional, non-pharmacological intervention into lifestyle and environmental factors (i.e., increased daily sunlight exposure and decreased nighttime noise and light) was associated with a modest decrease in mean duration of nighttime awakenings in intervention participants (10.6 minutes at baseline, 9.8 minutes at follow-up) versus an increase in controls (9.8 minutes at baseline, 13.8 minutes at follow-up) ( $F = 4.27, P = .04$ ).
- The intervention was associated with no significant effects on percentage of nighttime sleep or number of nighttime awakenings.
- The intervention was associated with a significant decrease in daytime sleeping in intervention participants (32% of daytime observations asleep at baseline, 21% at follow-up), with no change in controls (32% at baseline, 30% at follow-up;  $F = 20.68, P = .001$ ).
- The intervention was associated with increased participation in social ( $F = 22.42, P = .001$ ) and physical ( $F = 12.65, P = .001$ ) activities and social conversation ( $F = 5.04, P = .03$ ).



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## Limitations

Author-identified, main limitations are as follows:

- The effects of the intervention are not guaranteed if provided by other nursing home staff or in other nursing home settings
- The long-term effectiveness of the intervention is not addressed, since the intervention of the current study was provided for only five days and nights
- The cost-related issues in regard to the intervention are not addressed

## Design Implications

A multidimensional, non-pharmacological intervention that promotes positive environmental changes (i.e., increased daily sunlight exposure and decreased nighttime noise and light) along with lifestyle adjustments likely contribute to abnormal sleep/wake patterns in nursing home residents.

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