



AOTA Critically Appraised Topics and Papers Series

Alzheimer's Disease

**A product of the American Occupational Therapy Association's
Evidence-Based Literature Review Project*

CRITICALLY APPRAISED PAPER (CAP)

Focused Question

What is the evidence for the effectiveness of interventions designed to establish, modify, or maintain routines on the occupational performance, quality of life, health and wellness, and client and caregiver satisfaction of persons with Alzheimer's disease?

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Alessi, C. A., Martin, J. L., Webber, A. P., Kim, E. C., Harker, J. O., & Josephson, K. R. (2005). Randomized, controlled trial of a non-pharmacological intervention to improve abnormal sleep/wake patterns in nursing home residents. *Journal of the American Geriatrics Society*, 53, 803–810.

PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

State the problem the authors are investigating in this study.

Sleep disturbance is common in older adults, both in long-term-care facilities and in the community. It is associated with decreases in function and cognition and an increase in mortality. Factors contributing to sleep disturbance are understood and some interventions to mitigate these have been studied. Several of those interventions show some effectiveness. Also, several intervention studies examining other geriatric “syndromes” (e.g., falls), have found multimodal interventions to be most effective to address the multiple impacting factors. Hence, it may be that a multimodal intervention for sleep disturbance may also prove effective.

RESEARCH OBJECTIVE(S)

List study objectives.

- Test a multidimensional, nonpharmacological intervention to improve sleep-wake patterns, and indirectly quality of life, by targeting multiple contributing factors in sleep disruption.
- Design an intervention that would be feasible to implement in a nursing home (clinical applicability).

Describe how the research objectives address the focused question.

One aspect of the intervention is the establishment of a bedtime routine, involving personal care, decreased noise, and lights out. The entire intervention could be considered a routine to improve sleep hygiene, for example, establishing a routine of daytime exercise and light exposure would change the pattern of daily activity or inactivity and could be thought of as a larger routine. Although the study does not specifically address routines for people with dementia, a majority of the sample appeared to have dementia.

DESIGN TYPE:

Randomized controlled trial

Level of Evidence:

I

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? If no, explain.

Yes

No

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

Participants were recruited from four nursing homes in the Los Angeles area. Ethical approval was obtained from UCLA and informed consent was obtained.

Inclusion Criteria

≥ 15% observed daytime sleep over 2 days, and
≤ 80% nighttime sleep over 2 nights (using wrist actigraphy).
• Criteria based on normative data in healthy people.

Exclusion Criteria

Acutely ill, in contact isolation or completely bed-bound

Sample Selection Biases: If yes, explain.

Volunteers/Referrals

Yes

No

Attention

Yes Members of the control group did not receive an attention control; the authors note that this might have contributed to their circadian rhythms and inadvertently been a form of contamination.

No

Others (list and explain):

SAMPLE CHARACTERISTICS

N = 118

% Dropouts

#/ (%) Male

#/ (%) Female

Ethnicity

Disease/disability diagnosis

Check appropriate group:

| | | | | |
|-----------------|-------------------|--|---------------------|---------------------|
| <20/study group | 20–50/study group | 51–100/study group <input checked="" type="checkbox"/> | 101–149/study group | 150–200/study group |
|-----------------|-------------------|--|---------------------|---------------------|

Sample Characteristics Bias: If no, explain.

If there is more than one study group, was there a similarity between the groups?

Yes

No

Were the reasons for the dropouts reported?

Yes

No

INTERVENTION(S)— Included are only those interventions relevant to answering the evidence-based question.

Add groups if necessary

Group 1

| | |
|-------------------|--|
| Brief Description | Intervention group: encourage patients to remain out of bed during the day (8:00 a.m. – 8:00 p.m.); daily exposure to sunlight \geq 10,000 lux (for 30 minutes or more); participation in low-level physical activity program (daily, 45 minutes over 3 times during the day; Functional Incidental training): Sit to stand exercises, walking or wheeling, or ROM, stretching using progressive resistance bands; installation of a bedtime routine, including personal care, lights out, and reduced sources of noise nightly between 8:00 – 10:00 p.m.; reduced nighttime noise and light in hallways and sleeping rooms and decreased personal care through the night by nursing (between 10:00 p.m. – 6:00 a.m.). |
| Setting | Nursing home |
| Who Delivered? | Research staff (not clear how many) |
| Frequency? | Daily, between the hours of 8 a.m. and 8 p.m. |
| Duration? | Five consecutive days for each person in the intervention group |

Group 2

| | |
|-------------------|---------------------------|
| Brief Description | Control group: usual care |
| Setting | Nursing home |
| Who Delivered? | Nursing home staff |
| Frequency? | Daily |
| Duration? | 5 days |

Intervention Biases: Explain, if needed.

Contamination

Yes

No

Co-intervention

Yes

No (Possibly, not reported.)

Timing

Yes

No (The study was very brief.)

Site

Yes

No

Use of different therapists to provide intervention

Yes

No

MEASURES AND OUTCOMES— Included are measures relevant to answering the focused question.

Name of measure:

Outcome(s) measured (what was measured?):

Is the measure reliable (as reported in article)?

Yes

No

NR

NR = Not reported

Is the measure valid (as reported in article)?

Yes Detailed information provided regarding actigraphy establishing content validity

No

NR

How frequently was the measure used for each group in the study?

72 consecutive hours

Name of measure:

Structured behavioral observation

Outcome(s) measured (what was measured?):

Daytime sleep, participation in social and physical activities, and social conversation

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes

No

NR

How frequently was the measure used for each group in the study?

At baseline and follow-up every 15 minutes from 6 a.m. to 10 p.m. and every hour from 10 p.m. to 6 a.m. for 72 consecutive hours

Name of measure:

Bedside monitor

Outcome(s) measured (what was measured?):

Nighttime noise and light

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes

No

NR

How frequently was the measure used for each group in the study?

72 hours at baseline and follow-up

Measurement Biases

Were the evaluators blinded to treatment status? If no, explain.

Yes Not possible to blind research staff, but they were blinded to the study question.

No

Recall or memory bias. If yes, explain.

Yes

No Measures did not involve recall.

Others (list and explain):

Limitations (appropriateness of outcomes and measures). If no, explain.

Did the measures adequately measure the outcome(s)?

Yes

No

RESULTS

List results of outcomes relevant to answering the focused question

Include statistical significance where appropriate ($p < 0.05$).

Include effect size if reported.

Primary outcomes:
No statistically significant differences between intervention and control groups in nighttime total sleep, percentage of sleep, or number of awakenings. A decrease in mean awakening length (minutes) in the intervention group was significant at $p = .04$. A decrease (46%) in observed daytime sleeping was significant at $p < .001$, and no change was observed in controls.

Secondary outcomes:

Percentage of observed participation in social activities was significantly greater in the intervention group ($p < .001$), and percentage of observed participation in physical activities was also significantly increased in the intervention group ($p = .001$). There was a trend for increased participation in social conversation in the intervention group. No significant differences were noted for agitation or level of assistance required when eating or drinking.

Was this study adequately powered (large enough to show a difference)? If no, explain.

Yes

No

Were appropriate analytic methods used? If no, explain.

Yes

No

Were statistics appropriately reported (in written or table format)? *If no, explain.*

Yes

No

CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

Authors conclude that this was a well-tolerated intervention that led to a decrease in daytime sleeping and an increase in participation in social and physical activities and conversation in nursing home residents with cognitive and functional impairment and significant comorbidity. The intervention has a strong theoretical basis and it could be translated to nursing home practice, although the intervention was implemented by research staff rather than nursing home staff. If a main effect of this intervention is decrease in daytime sleeping, it has strong impact on quality of life. However, changes in the amount of nighttime sleeping were not noted.

Were the conclusions appropriate for the Study Design (Level of Evidence)? *If no, explain.*

Yes

No

Were the conclusions appropriate for the statistical results? *If no, explain.*

Yes

No

Were the conclusions appropriate given the study limitation and biases? *If no, explain.*

Yes

No

IMPLICATIONS FOR OCCUPATIONAL THERAPY

This section provides guidance about clinical practice, program development, and other implications of the study findings as they relate to the focused question.

Sleep disturbance is common in older adults, both in long-term-care facilities and in the community and has important implications for quality of life. Adults who are sleep deprived and spending daytime hours sleeping cannot be engaged in meaningful occupation. Several of these interventions have been shown to be effective in sleep disorders. While a multimodal intervention for sleep disturbance may prove most effective, it is unfortunate that bedtime routine was not examined alone for its impact. As such, this intervention must be taken as a whole. However, changing one's living pattern to include exposure to light, increased physical activity, limited in-bed time during the day, and establishing a personalized bedtime routine, could all be considered to be aspects of a larger daily routine. Occupational therapists working in nursing home settings may be able to work with the nursing team to develop strategies and education to implement this type of multimodal approach. This study suggests that the intervention may contribute to indicators of quality of life, even if the amount of nighttime sleep is not altered. However, the long-term effects of the intervention have not been examined, nor have the costs for implementation.

This work is based on the evidence-based literature review completed by Lori Letts, PhD, OT Reg. (Ont.), Mary Edwards, MHS, OT Reg. (Ont.), Julie Berenyi, BHS (OT), OT Reg. (Ont.), Kathy Moros, BHS (OT), OT Reg. (Ont.), Colleen O'Neill, BSc (OT), OT Reg. (Ont.), and Colleen O'Toole, MSc (OT), OT Reg. (Ont.)

CAP Worksheet adapted from: Critical Review Form – Quantitative Studies ©Law, M., Stewart, D., Pollack, N., Letts, L., Bosch, J., & Westmorland, M., 1998, McMaster University. Used with permission.

For more information about the Evidence-Based Literature Review Project, contact the American Occupational Therapy Association, 301-652-6611, x 2052.



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