



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 effect of interventions designed to modify and maintain perceptual abilities on the occupational performance of persons with dementia?

McGilton, K. S., Rivera, T. M., & Dawson, P. (2003). Can we help persons with dementia find their way in a new environment? *Aging and Mental Health*, 7, 363–371.

PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

State the problem the authors are investigating in this study.

Canadian nursing homes are being rebuilt and the number of special care units is increasing. Because of this, there is an increase in the number of residents being transferred to new environments. Researchers have consistently shown that relocation for persons with dementia has been associated with a significant degree of disorientation. There is some initial evidence that spatial orientation interventions may be useful in reducing that disorientation, but rigorous study has not been undertaken.

RESEARCH OBJECTIVE(S)

List study objectives.

The purpose of the study was to examine the effects of a way-finding intervention on residents' abilities to find their way in a new environment.

Describe how the research objectives address the focused question.

This study investigates the effects of an intervention focused on assisting residents with Alzheimer's disease, who were transferred from one building to another, to find their way in their new environment using a behavioral training technique that included locational maps. The effect of the intervention on the residents' spatial orientation and agitation were also examined. This study aims to examine an intervention designed to use residents' remaining perceptual abilities in order for the residents to find their way from their room to the dining room. Way-finding can be an important component of occupational performance.

DESIGN TYPE:

Randomized controlled trial (RCT)

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.

The study was conducted in all of the cognitive support units for people with Alzheimer’s disease in the nursing home section of a large university-affiliated geriatric center for care, 6 weeks post relocation. Residents were relocated to a new facility because the old facility did not meet the new building code requirements for nursing homes in Ontario, Canada.

Inclusion Criteria

Inclusion criteria:

- Diagnosis of Alzheimer’s disease in residents’ medical chart
- Moderate to severe cognitive decline as assessed by the Global Deterioration Scale (GDS), Stages 3–6;
- Able to ambulate
- Able to understand English

Exclusion Criteria

- Residents with severe cognitive decline (GDS Stage 7)
- Residents who were acutely medically unwell

Sample Selection Biases: *If yes, explain.*

Volunteers/Referrals

Yes

No

Attention

Yes

Although unlikely, the intervention group did receive more individualized attention than the control group.

No

Others (list and explain):

SAMPLE CHARACTERISTICS

N = 32

% Dropouts

6 (15%)

(%) Male

6 (33%
control group;
6% treatment
group)

(%) Female

26 (67%
control group;
94% treatment
group)

Ethnicity

NR

Disease/disability diagnosis

Alzheimer's disease

NR = Not reported

Check appropriate group:

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

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: Backward chaining involving rehearsal of way-finding; communication techniques to facilitate residents' way-finding; use of an individualized locational map.
Setting	Nursing home
Who Delivered?	2 research assistants (interventionists)
Frequency?	3 times/week for 4 weeks
Duration?	30 min

Group 2

Brief Description	Control group: No specific intervention
Setting	Nursing home
Who Delivered?	N/A
Frequency?	N/A
Duration?	N/A

Intervention Biases: *Explain, if needed.*

Contamination

Yes

No

Co-intervention

Yes

No

Timing

Yes

No

Site

Yes Possibly, as different residents may live different distances from the dining room and this may have influenced whether the resident learned or not (i.e., more complex routes may have decreased residents' ability to find their way).

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:

Pittsburgh Agitation Scale (Rosen et al. 1994)

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

Residents' level of agitation

Is the measure reliable (as reported in article)?

Yes Internal consistency was low at pretest (.35) but at posttest was more acceptable (0.54)

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?

Scale completed by blinded research assistant while resident found his or her way to the dining room. Testing done at baseline and then completed at 1 week (posttest 1) and 3 months (posttest 2) after the end of the 4-week intervention.

Name of measure:

Spatial Orientation Subscale

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

Measured residents' global spatial orientation

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?

Scale completed by blinded research assistant while resident found his or her way to the dining room. Testing done at baseline and then completed at 1 week (posttest 1) and 3 months (posttest 2) after the end of the 4-week intervention.

Name of measure:

Study-designed outcome

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

Residents' ability to find their way to the dining room and their bedroom

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?

Scale completed by blinded research assistant while resident found his or her way to the dining room. Testing done at baseline and then completed at 1 week (posttest 1) and 3 months (posttest 2) after the end of the 4-week intervention.

Measurement Biases

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

Yes

No

Recall or memory bias *If yes, explain.*

Yes

No

Others (list and explain):

Potential recall bias with the spatial orientation subscale as the research assistant collected information about the primary nurses' *perception* of the residents' spatial orientation and different nurses reported on the residents' abilities at various times.

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

More residents in the intervention group were able to find their way to the dining room compared to those in the control group 1-week post-intervention ($p=0.03$), but this was not sustained at 3 months post-intervention. There were no differences between groups in finding their way to their bedrooms. Both groups had significantly decreased agitation at posttest 1 ($p=0.04$), suggesting that both groups benefited, in terms of their agitation, from the relocation. At 3 months post-intervention, residents in the treatment group had significantly higher agitation than those in the control group ($p=0.024$). Spatial orientation scores were low for both groups. The control group's scores declined over time more than the intervention group, but the difference was not statistically significant.

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

Yes

✓ The sample size was calculated based on a 4-unit difference in scores between the groups based on the testing of the Spatial Orientation scale. 15 participants were needed in both groups. However, the authors note that there was little previous literature to draw on to calculate sample size, particularly since the main outcome was way-finding, not spatial orientation. A slightly larger sample size may have given researchers and readers more assurance about the power of the study.

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.

The authors conclude that the study provides initial evidence that a backward chaining way-finding intervention can help residents with dementia in nursing homes find their way to specific destinations, at least immediately following the intervention. They note that further research with larger sample sizes is warranted.

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.

As occupational therapists, it is within our scope of practice to assess the way-finding abilities of residents with moderate to severe Alzheimer's disease, especially when they are newly admitted to a unit. The results of this randomized controlled trial support the potential efficacy of a way-finding program on the residents' ability to locate an intended destination. This supports the need for ongoing intervention. Based on this study, the research suggests that using backward chaining enhances the short-term way-finding ability for persons with moderate to severe Alzheimer's disease. It also suggests that to further enhance the success of this intervention, rehearsals of way-finding need to be individualized and spread out over time, and careful attention needs to be given to the environmental elements that the residents select, remember, and utilize. The use of locational maps was anecdotally reported to be less useful in assisting with way-finding, but further exploration of this is warranted. Finally, this study suggests that this type of program could be carried out by paraprofessional staff with the supervision of professional staff and, similarly, this protocol could be taught to families, which would be particularly beneficial if there was a language barrier, and since it appears that regular intervention may be needed to sustain the way-finding successes.

REFERENCES

Rosen, M. D., Burgio, L., Killer, M., Cain, M., Allison, M., Fogleman, M., et al. (1994). The Pittsburgh Agitation Scale: a user-friendly instrument for rating agitation in patients. *American Journal of Geriatric Psychiatry*, 2, 52-58.

This work is based on the evidence-based literature review completed in August 2005 by Lori Letts, PhD, OT Reg. (Ont.); Jacqueline Minezes, BSc (OT), OT Reg. (Ont.); Julie Berenyi, BHSc (OT) OT Reg. (Ont.); Mary Edwards, MHSc, OT Reg. (Ont.); Kathy Moros, BHSc (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.



Copyright 2007 American Occupational Therapy Association, Inc. All rights reserved.
For personal or educational use only. All other uses require permission from AOTA.
Contact: copyright@aota.org