



## 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?**

Hope, K. W. (1998). The effects of multisensory environments on older people with dementia. *Journal of Psychiatric and Mental Health Nursing*, 8, 377–385.

#### PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

**State the problem the authors are investigating in this study.**

The author states that there has been a rapid growth in the use of multisensory environments in old age psychiatry; however, there is a limited amount of literature regarding the use and efficacy of multisensory rooms. This study reports on one element of an ongoing project aimed at developing the use of a multisensory room in a Department of Old Age Psychiatry.

#### RESEARCH OBJECTIVE(S)

List study objectives.

The research objectives are aimed at addressing the following questions:

- 1) How do older people with dementia respond to the individual pieces of equipment in the multisensory room?
- 2) To what extent does exposure to the room influence the observed behavior of patients both in the short and medium term?

Describe how the research objectives address the focused question.

The objectives of the study address the potential impact of the perceptual intervention (multisensory rooms/sessions) on behaviors (including mood, speech, relating to person, relating to environment, need for prompting, and stimulation levels) and engagement in meaningful activity.

**DESIGN TYPE:**

Descriptive study

**Level of Evidence:**

III

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 sample consisted of patients with a consultant diagnosis of dementia, experiencing the multisensory room as part of their ongoing care.

**Inclusion Criteria**

The sample consisted of patients with a consultant diagnosis of dementia, experiencing the multisensory room as part of their ongoing care. From the article, it appears that all subjects were from the Department of Old Age Psychiatry 52 inpatient beds, though the authors did not explicitly state this.

**Exclusion Criteria**

NR

NR = Not reported

Sample Selection Biases: *If yes, explain.*

Volunteers/Referrals

Yes  The author did not describe how patients were recruited for the study. It seems that patients included in the study were those experiencing multisensory room as part of their care. It is not known how similar or dissimilar these patients were from the rest of the patients.

No

Attention

Yes  There was no comparison group; however, it is possible that favorable outcomes were due to attention from staff, which was a part of the intervention.

No

Others (list and explain):

**SAMPLE CHARACTERISTICS**

N= 29

% Dropouts

# (%) Male

# (%) Female

Ethnicity

Disease/disability diagnosis

Check appropriate group:

<20/study group	20–50/study group <input checked="" type="checkbox"/>	51–100/study group	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	Longstanding staff received instructions on the use of the equipment by the representatives of the supplying company and received advice from key staff in a neighboring Trust who operated similar rooms. The author mentioned that a protocol was developed that described the process of initiating, maintaining, and closing the sessions and included recommendations for the order of use for the various equipment. This was done with the aim of introducing an element of standardization into the sessions. However, the author does note that it is not entirely possible to impose such structure, given the client population and the patient-led
-------------------	--

	philosophy of the program itself. The protocol was not described in detail. The staff member completed an assessment package after each time they accompanied a patient to the multisensory room.
Setting	Multisensory room located on the first floor of a two-story building. The room has a bubble tube (large tube filled with water, backlit by colored bulbs to enhance the effect of the bubbles rising) situated in front of two mirrors; large spray of fiber-optic cables that change color in a rhythmic manner; a cassette player for background music; a projector to project abstract and representational images onto the walls; a mirror ball used to generate colored patterns that can be stationary or mobile; and various tactile equipment such as soft balls and spike rings.
Who Delivered?	21 separate staff members were involved; 17 were nurses. Of the 43 sessions where staff gave their grade, the authors report that 56% (n=24) were delivered by staff members, which included occupational therapy and physiotherapy assistants, student nurses, and nursing auxiliaries. Although initial training was provided to staff members, due to staff turnover and the facility being a training area for students, ongoing education and training was not provided. This resulted in staff members who did not receive ongoing education to implement the intervention.
Frequency?	There were a total of 45 separate sessions. Twenty-one patients experienced one session, two patients experienced two sessions, four patients experienced three sessions, and two patients experienced four sessions. Sixty percent of the sessions lasted 30 minutes or more, with 84.5% lasting 20 minutes or more. The reasons given for the difference in sessions were that on 6 occasions, the patient left the room.
Duration?	Intervention studied over a period of 8 months.

Intervention Biases: *Explain, if needed.*

Contamination

Yes

No

Co-intervention

Yes  It is not clear what other interventions/treatments the patients are receiving in addition to the multisensory sessions

No

Timing

Yes

No

Site

Yes

No

Use of different therapists to provide intervention

Yes  Twenty-one different staff members were used. The large number of staff would result in variance in the way in which the sessions were conducted and thus influenced the results. It was suggested that some staff were more comfortable than others with utilizing the multisensory room.

No

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

Name of measure:

An assessment package was developed and completed at each session by the accompanying staff member. The assessment package included:

- 1) Demographic data
- 2) Information about behavior observed prior to the session
- 3) Patient's response to individual pieces of equipment
- 4) Patient's response in the room, using the "Interact" (see below)
- 5) Information about behavior observed after the sessions
- 6) Pulse rate measurements taken immediately before and after the sessions
- 7) Summary of the perceived effect on the patient from the member of staff's perspective

"Interact," a 22-item 5-point Likert format questionnaire has been developed from the Dutch Snoezelen forms. The authors noted that the Interact has not been measured for reliability or validity elsewhere, but appears to have a high degree of content validity (Polit & Hungler, 1990) and construct validity was enhanced by offering operational definitions beside each variable.

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

The Interact records perceived frequency of behavior during the session and any perceived changes in that behavior over the course of the session.

The variables on the Interact are as follows:

Mood, Speech, Relating to Person, Relating to Environment, Need for Prompting, and Stimulation Level.

Is the measure reliable (as reported in article)?

Yes

No  Author reports the lack of a rigorous method to examine interrater reliability, although a series of measures was taken to promote it.

NR

Is the measure valid (as reported in article)?

Yes

No  The author states that the Interact was developed from Dutch Snoezelen forms and appears to have a high degree of content validity. However, validity of the Interact has not been measured elsewhere.

NR

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

The assessment package was completed after every session.

### Measurement Biases

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

Yes

No  Not Reported. It is not stated to what degree the purpose of the study was discussed with the observers. Given that they had detailed observational assessments to make, it is likely the observers understood the objective was to determine the effect being in the room had on such variables.

Recall or memory bias *If yes, explain.*

Yes

No

Others (list and explain):

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

Did the measures adequately measure the outcome(s)?

Yes

No  It would be difficult to know for certain, as the measure has not been studied for reliability or validity.

## RESULTS

List results of outcomes relevant to answering the focused question

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

Include effect size if reported

- Response to Equipment: Twenty-one of the 45 sessions (47%) demonstrated a negative response by 16 of the 29 patients (55%). Of 21 patients who had any negative response, 13 patients had an overall positive score.
- Mood: 35.6% (n=16) of the sessions showed increased levels of happiness and contentment. 22.2% of the sessions showed decreased fear and anxiety.
- Speech: Spontaneity of speech increased on 7 occasions (15.6%); sensibility of speech increased over the session in 5 instances.
- Relating to Person: Level of eye contact was reported as increasing over the session (n=11).
- Relating to Environment: 72.4% (n=21) of patients were reported as tracking stimuli at least some of the time. Authors also noted that there was a decrease in attentiveness (n=3 and tracking n=4).
- Stimulation—Considered under four headings:
  - a) Undesirably active (wandering, restless, aggressive): For n=25, there was no such activity. On 16 occasions when this activity did occur, it was reported to have decreased over the session on 6 occasions and increasing on 3 occasions
  - b) Desirably active (enjoying self, active, or alert): On 8 occasions there was no evidence of this. In 23 of 45 sessions, it was evident at least some of the time. The reported change was an increase in 12 sessions (26.7%).
  - c) Undesirably inactive (bored, inactive, or sleeping inappropriately): This type of activity was absent in 29 sessions (64.4%)
  - d) Desirably inactive (relaxed, content, or sleeping appropriately): 75.5% of the patients were judged to be appropriately relaxed and desirable inactivity increased in 11 cases (24.4%).
- Pulse Rate: No significant difference was found in pulse rates before and after the sessions.

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

Yes

No  No analysis of power described. Only 29 participants were studied over an 8 month period; most (n=21) only had one session.

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 author concludes that the results of the study support the use of multisensory rooms as an adjunct to the care of older people with dementia. The sessions are generally enjoyable events and achieve desirable outcomes. The author did note that not all patients had positive experiences; particularly, the tactile equipment resulted in the most negative response when it happened. Therefore, there are exceptions and a sensitive, planned application is preferable. Based on the results of this study, the target groups suggested for multisensory sessions are individuals with low mood and/or anxiety, as well as individuals who have shown beneficial results to relaxation. It is suggested that the sessions could be more than a one-time occurrence and preferably by the same individual or care team. The author suggested that future research could assess the long-term benefits of the multisensory sessions on individual patients.

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

Yes

No  Because this is a single group observational study, the evidence is not strong enough to support the conclusion that a multisensory room is effective. More time interacting with staff members may be as or more effective.

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  It is appropriate to say that exposure to multisensory rooms should be decided on an individual basis, as some patients react negatively to them, or some items in them. This is a descriptive study and therefore we cannot make inferences about cause and effect. In addition, the limitations make it difficult to presume whether or not we should, as the author states, target people with low mood or anxiety. We do not know enough yet to make such determinations.

## 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.

This article addresses the use of a perceptual intervention (multisensory room sessions) and the potential impact that has on engagement in meaningful activity. The results from this study favor the use of multisensory sessions for people with dementia; however, a positive experience did not occur for all patients, particularly around the tactile equipment. This highlights the need for client-centered approaches and care plans. The study design is not a high level of evidence and does not provide strong support for implementing a multisensory room if one does not already exist. Beyond the cost of implementing a multisensory room, the author notes that developing a multisensory room alone is not enough to ensure utilization; program development needs to include education, rationale for the intervention, organization of the implementation, and maintaining motivation. The author addresses the limitations of the study, which include multiple staff members involved in carrying out the intervention; even though a protocol was established for intervention implementation, there still was a lack of standardization. Other limitations include issues with interrater reliability and a lack of rigorous assessment method. Another aspect not controlled for in this study was the variability in diagnosis of dementia. Therefore, care should be taken when interpreting the results of this study, particularly given the high cost generally associated with the creation of multisensory rooms.

### References from studies included in the review

Polit, D. F. & Hungler, B. P. (1990). *Essentials of Nursing Research*. Lippincott, NY.

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](mailto:copyright@aota.org)