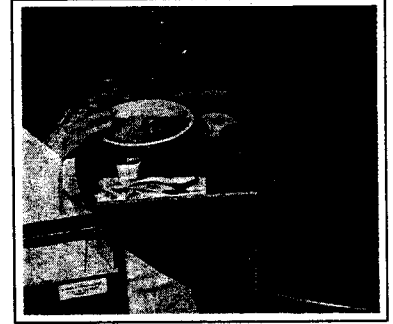


## Methodology



## IMPROVING DINING FOR PEOPLE WITH DEMENTIA

### Sample

Twenty-five residents with dementia, living in two long term care facilities, participated in the study. Inclusion criteria were a diagnosis of dementia, ability to feed oneself with no or minimal assistance, and consistent attendance in the dining room for at least two meals a day. The population included three men and twenty-two women over the age of sixty-five.

*Twenty-five residents with dementia, living in two long term care facilities, participated in the study.*

Eleven residents lived at Facility 1, a nursing home that provided care both to people with and without dementia. At this facility, many residents ate meals in their rooms, but only residents who ate at least two meals a day in the dining room were included in the study. During baseline, six residents ate all three meals in the dining room and five residents ate two meals in the dining room. At the time of posttest data collection, attendance in the dining room had increased. Nine residents ate three meals in the dining room and two residents ate two of their meals in the dining room. Review of all subjects' Minimum Data Set (MDS) for Nursing Home Resident Assessment and Care Screening indicated impaired decision making ability for each person in the study. At Facility 1, three residents were noted as demonstrating difficulty in new situations only, seven residents demonstrated poor decision making and required supervision, and one resident was said to never/rarely make decisions.

Facility 2 was an assisted living facility that provided care exclusively to people with dementia. All fourteen residents in the study ate every meal in the dining room. All were diagnosed as having dementia as indicated by their medical chart. MDS information indicated that eleven of the participants were considered to be moderately impaired in their decision-making skills and three of the participants were classified as severely impaired.

### Instruments

#### *Caloric Intake*

The research team recorded caloric intake of breakfast, lunch, and dinner during three consecutive days. A

## IMPROVING DINING FOR PEOPLE WITH DEMENTIA

licensed and registered dietitian analyzed each menu item and assigned them a caloric value. At the end of each meal, intake was recorded separately for each item based on the percentage of the item eaten.

### *Lighting*

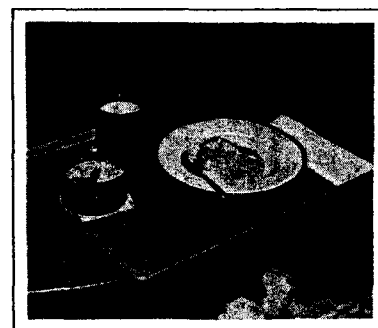
Two distinct aspects of the lighting environment were assessed. The first was light intensity (measured in foot-candles) at the table surface. The second included light level readings around the perimeter of the room, to determine the contrast ratio in lighting in the dining rooms. Because elderly individuals experience increased time to adjust to difference in light levels, it is important for lighting to be fairly even throughout a room (a 1:3 ratio is considered acceptable). Significant differences between the lightest and darkest parts of a room make it more difficult for elderly to function. The Illuminating Engineering Society of North America (1998) recommends a minimum ambient lighting of 50 Fc for a senior living facility dining room.

Foot candle measures were taken with an Extech Instruments Datalogging Light Meter with a range settings of 20, 200, and 2,000 Fc. The light meter is accurate to + .65 Fc between 0-20 Fc and + 2 Fc between 0-50 Fc. Repeatability specifications are + 2%. Readings were taken at each table top in the dining room as well as at the perimeter of the room during breakfast, lunch, and dinner. At baseline, Facility 1 had eight four feet long 4-bulb (40 watt) florescent light fixtures with two bulbs in each fixture, and three ten-bulb (25 watt) chandeliers. The staff did not turn on the chandeliers during meals. This site had windows that allowed natural light to come into the room. Lighting was poor on the perimeter of the room, where tables were close to the wall. The lighting mean at baseline (all tables) was 24.68 Fc and the contrast ratio was 12:1. During baseline, food was served on light gray trays with white or cream colored plates.

Facility 2 had two four feet long 2-bulb (40 watt) florescent light fixtures, and four recessed down light luminaries with 60 watt bulbs that were not over any tables, but placed in the surrounding area. There were no windows in the dining area. The residents' food was served on pink trays with white plates. The tables had a glossy finish that

*Caloric intake of breakfast, lunch, and dinner was recorded during three consecutive days.*

*Light levels were measured at the table surface and around the perimeter of the room.*



*Baseline contrast at table setting, Facility 1.*

## IMPROVING DINING FOR PEOPLE WITH DEMENTIA

created glare and parts of the finish were peeling off, resulting in distracting color and texture variations. The lighting mean at baseline was 4.82 Fc and contrast ratio was 21:1.

### *Functional Abilities*

Residents' abilities and behaviors were assessed using the Meal Time Assistance Screening Tool (MAST) (Steele, 1996) and the Communication Outcome Measure of Independence (COMFI) (Santo Pietro & Boczko, 1997) during nine meals for 3 consecutive days. To ensure inter-rater reliability all researchers were trained in accurate data collection for the calorie count, MAST, and COMFI. The MAST examines the following 8 areas related to mealtime: mealtime prerequisites, seating/positioning, positioning problems, dentition and oral hygiene, type of diet provided, type of assistance provided, intake, challenging behaviors, and eating problems. Items on the MAST are weighted to reflect severity of a problem or condition. An item score of 0 is indicative of functioning within normal limits, whereas a higher score is indicative of difficulties in one or more of the areas.

The COMFI Scale includes 20 items that measure performance in the following four areas: psychosocial interaction, communication and conversation, mealtime independence, and cognition. Items are given a score between 0 and 5, and subjects receive a total score between 0 and 100. An individual item score of 0 indicates that a behavior never occurs and an item score of 5 indicates that a behavior occurs always or 100% of the time. A higher score indicates higher functioning. Scores were based on what was observed during nine consecutive meals. Items on the COMFI Scale have demonstrated inter-rater reliability, and construct and content validity among persons with dementia (San Pietro & Boczko, 1997).

### *Intervention*

At Facility 1, two 75-watt halogen floodlight reflectors were added to the darkest wall, and angled toward the ceiling. All of the chandeliers were turned on during meals, and two additional florescent 40 watt bulbs were placed in the 4-bulb florescent fixtures (which originally contained

*Residents' abilities and behaviors were assessed using the Meal Time Assistance Screening Tool (MAST) and the Communication Outcome Measure of Independence (COMFI).*



*Contrast at table setting after intervention, Facility 2.*

## IMPROVING DINING FOR PEOPLE WITH DEMENTIA

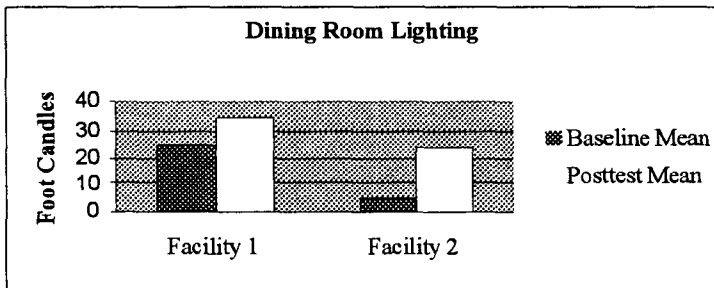
two bulbs). Navy blue tray liners were added under the plates to increase contrast at the table setting. Lighting was increased to a mean footcandle level of 35.05 Fc from 24.68 Fc (see Figure 1). The ratio between the lightest and darkest part of the room was reduced from 12:1 to 3:1.

At the second facility, the two 2-bulb florescent fixtures were removed and replaced with two four feet long 4-bulb (40 watt) fixtures. 3M brand clip on reflector panels were added to the 4-bulb fixtures to increase the light output (3M packaging states that the panels will increase light output up to 50%). In addition, two 75-watt halogen floodlight reflectors were attached to the wall and positioned to reflect off the ceiling. The tables were covered in dark green matte finish tablecloths to cover the peeling table surface and reduce glare, and navy blue tray liners were added to create contrast with the white plates. Light intensity levels were increased significantly from 8.82 Fc to 22.96 Fc. Although the lighting changes that were able to be made within the time schedule and budget did not increase the light intensity to the recommended minimum level of 50 Fc, the improvement in lighting was immediately noticeable as one entered the room. The ratio between the lightest and darkest part of the room was reduced from 21:1 to 13:1.

The changes that were made in the dining rooms were easy to implement and cost approximately \$300 for each facility. The lighting challenges in the two dining rooms were caused by typical problems that can be found in many older long term care facilities across the country.

## IMPROVING DINING FOR PEOPLE WITH DEMENTIA

Figure 1. Mean baseline and posttest light intensity at table level.



The lighting and contrast changes were completed four days after the baseline data was taken. All assessment measures were repeated with the lighting and contrast changes in place. Since the facility menus were on four-week cycles, posttest data collection was conducted four weeks after baseline with the same menu items. Periodic checks were made at the facilities to ensure that all of the lights were turned on and that the tray liners and/or table cloths were being used during each meal.