A therapeutic cooking program for older adults with dementia: Effects on agitation and apathy

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Abstract:
This study describes a clinical trial of a recreational therapy cooking program for older adults with dementia and disturbing behaviors living in an assisted living center. After two weeks of daily participation, results indicated a significant improvement in levels of both passivity and agitation. Biographical data collection was useful in identifying the physiological changes that occurred during each session. Implications for service delivery are included.
Key words: therapeutic cooking program, agitation, apathy, dementia, Alzheimer's disease

Article:
Introduction
Food—and the act of cooking— have powerful meaning to older adults. Food defines culture, family history, and traditions. For many, cooking signifies basic worth, self- image, and role identity. Food is also connected with feelings of love, pleasure and enjoyment, holidays, celebrations, family, and spirituality. The product of cooking may be regarded as something to share, as family recipes often have a history attached to them. In traditional cultures, cooking, as a practical art, is passed down from mothers and grandmothers to daughters and granddaughters with great pride. This ritual creates strong family relationship bonds. For most of today's older adults, the women in the family were traditionally the cooks and heads of the kitchen. The male cooking role took place outdoors during barbecues, camping, fishing, or hunting trips. Most older adults, both males and females, have fond memories of Mom's, Grandma's, or their spouse's home cooking.

Social interactions and normalized experiences improve quality of life by providing individuals with opportunities to attain happiness, a sense of purpose, and a state of well-being. Recreational therapy experiences have been shown to relieve stress, improve physical function, reduce depression, and change behavior in older adults with dementia living in residential settings.[1] Older adults with dementia and disturbing behaviors who live in residential settings frequently have barriers to activities they performed in the past. Some of these barriers include functional, behavioral, and mobility impairments,[2] and a lack of individualized or adapted programs that address these limitations.

For older adults with dementia in residential settings, the opportunity to cook or enjoy homemade foods is often limited. Cooking programs have the potential to calm, increase appetite, and entice people to a social gathering, and relieve some of the stress related to living in group settings. These programs provide familiar sensory stimulation with smells, textures, and taste. They also provide cognitive and physical stimulation. Cooking provides the opportunity to take pride in oneself and perform past roles. Providing individuals with cooking opportunities increases socialization as preparing and eating foods is the most social of all activities of daily living (ADLs) and is the glue of our social system.

This article reports a study of a prescribed therapeutic cooking program for 12 older adults with dementia who resided in an assisted living center in Florida. Biographical data were collected on all participants, and treatment and control groups were examined for the effects of the therapeutic cooking program on disturbing behaviors.

Literature review

The Omnibus Reconciliation Act of 1987 (OBRA '87) states that long-term care recreational programs must meet not only the interests of clients, but also their physical, mental, and psychosocial needs.'" This is challenging for older adults with dementia, as their ability to initiate or sustain meaningful activity is limited due to pathological changes associated with cognitive impairments.4 Long-term care residents with dementia are especially susceptible to boredom and functional decline unless special programs are provided to meet their needs and interests.[5,6] It is imperative to prevent boredom in these residents, as the consequence is often disturbing behavior.[7] Disturbing behaviors may be manifested as apathy, agitation, or both. Agitation is defined as inappropriate verbal, vocal, or motor activities' and occurs in up to 90 percent of persons with dementia.[8,9] Apathy is a lack of motivation that is not attributable to a diminished level of consciousness, cognitive impairment, or emotional distress. Apathy has several components—lack of initiation and perseverance, lack of emotional expression, and lack of goals. The apathy spectrum includes decreases in interest, motivation, spontaneity, affection, enthusiasm, and emotion.[10,11]

Up to now, there has been little or no research on the behavioral effects of cooking groups for older adults with dementia, although the components of a cooking program do have well-documented support. Sensory stimulation interventions have been found to reduce passive behaviors,[12] provide constructive engagement and pleasure,[13,14] and lessen behavioral problems.[15-17] Reminiscence-based sensory motor stimulation[18] using cooking was used successfully in clinical practice as a behavioral alternative to medication or restraint in long-term care clients.

As early as 1979, cooking groups have been recommended for older adults with various psychiatric problems, including dementia.19 Research has shown that long-term care facilities are increasingly incorporating some sort of therapeutic kitchen in remodeling or new construction plans. This same study suggests that a higher number of residents prefer participation in recreational cooking programs than they do in household chore programs.[20] Unfortunately, research has also found that many of these therapeutic kitchens are never used by the residents.[21] Nutritional problems are a concern for older adults with dementia, and there is a desperate need for further investigation[22] of social interventions surrounding food and its preparation.

In older women without dementia, it has been found that living a normal life means being able to perform food-related work, as cooking was a central task in their life.[23,24] A longitudinal study by Edstrom[25] found that attitudes about food remain relatively unchanged despite changes in health, social environment, and roles. A recent leisure preference study of 107 older adults with dementia in residential settings found that cooking was mentioned by 49 percent of the subjects as a favorite activity, yet only one of the five sites offered this activity to its residents.[21] Cooking groups have been used in recreational and occupational therapy programs to help clients follow simple directions, socialize with each other, plan and prepare snacks and meals, and provide normalized sensory stimulation. [1,2,26-28]

There is strong clinical evidence that individuals who are deprived of environmental stimuli or activity are at an increased risk for disturbing behaviors.[29-34] Cooking programs are an appropriate and meaningful way to enrich the environment; but, for best results, the programs need to be matched to the functioning level of the residents. In fact, the mismatch between challenging activities and functioning level significantly impacts both behavior and the ability of the resident with dementia to feel successful.[26] For this reason, it is important that the recreational therapist adapt each cooking task to the skill level of the individual completing the task. A research project, using kitchen skills to assess cognitive impairments, found that 69 percent of the individuals with early stage dementia had problems in this area of functioning.[35] This indicates the importance of adapting therapeutic cooking to the functioning levels of the participants with dementia.

Based on leisure preference information, cooking programs are a popular intervention with nursing home residents. These programs have outstanding potential in a variety of outcome areas. This intervention study specifically examined the impact of therapeutic cooking programs on disturbing behaviors.

Conceptual framework

The conceptual framework for understanding the agitation and apathy was the Need-Driven Dementia-Compromised Behavior (NDB) model.[36] The NDB model is a middle-range theory, which has challenged the prevalent view that disturbing behaviors are simply part of the disease process. It changes the view of dementia-related behaviors from one of "disruptive" to one of understandable need. As described by Kolanowski,[37] the NDB model focuses on the interaction of relatively stable individual characteristics (background factors) and current situational variables (proximal factors) that together trigger disruptive behaviors. If these needs are responded to appropriately, quality of life is enhanced. The needs-driven behaviors expressed by individuals with cognitive impairments are the most meaningful and integrated responses they can communicate given the restrictions of their disease, the portions of their character and abilities that are still intact, and other supportive or restrictive factors in the environment. In spite of cognitive losses, older adults with dementia retain the basic human needs to belong, have an identity, and feel capable and useful.

The decision to use a cooking program as an intervention was made based on the Continuity Theory of Aging.[38,39] This theory is based on the hypothesis that central personality characteristics become more pronounced with age or are retained through life with few changes. People age successfully if they maintain their preferred roles via adapted techniques throughout life. The contribution of familiar leisure activities to well-being in later life has been developed in the writings of scholars such as John Kelly and Robert Atchley.[40-42] According to Kelly and Ross,[40] leisure activities provide a social space for maintaining and developing valued identities in which some competence, achievement, and recognition are gained. Participation in leisure activities may be particularly important as adults seek to adapt to changes in role configurations in later life. Atchley[41] argued that the contribution of leisure to life satisfaction among older adults is that it provides social role continuity and a bridge between pre- and postretirement. Continuity in satisfying leisure activities, according to Atchley,[42] helps prevent and minimize the negative effects of physical and psychological aging. Change, a normal part of continuity, challenges individuals to adapt to novel situations, Recreation therapy helps older adults with dementia adapt their leisure activities to their current function.

Methods

Research hypotheses

This research was designed to answer the following three questions:

1. Does participation in a therapeutic cooking program have a significant effect on agitated behaviors in older adults with dementia?
2. Does participation in a therapeutic cooking program have a significant effect on passive behaviors in older adults with dementia?
3. Does participation in a prescribed therapeutic cooking intervention have an effect on physiological processes as measured by biofeedback?

Design

This study used a pretest/posttest experimental design in addition to biofeedback measures of physiological effects during interventions. Blood pressure variability (BPV) and heart rate (HR) were measured and compared to baseline and intervention, intervention and control, and coded videotaped data. Statistical analyses included t-tests for two nonindependent sample means, ANOVAs, and correlations. An alpha of .05 was used to determine significance.

An intervention group and delayed intervention control group were randomly assigned following the collection of baseline data on days one through five. Four subjects were involved in the cooking program at a time. The intervention group received adaptive therapeutic recreation cooking five days a week for one hour per day for two weeks. The delayed intervention group took part in the usual facility activities for two weeks followed by two weeks in the adaptive therapeutic recreation cooking program.

Sample
Inclusion criteria were as follows: 1. 65 years of age or older; 2. Living in the residential facility at least three months; 3. Diagnosis of dementia in the medical record; 4.Mini-Mental State Examination (MMSE)43 score of 20 or less; 5. Identified by staff as having disturbing behaviors; 6. Signed consent by guardian; 7. Enjoyed cooking in the past; and 8. Stable on current medications. Twelve participants were recruited and all completed the study.

Setting and participants
This project took place in an assisted living center in Florida. All participants resided on a locked special care unit. The unit had a therapeutic kitchen on site, which up until then had not been used. Table 1 presents detailed demographic information for the participants in the study.

Target behavior
To determine the target behavior of each participant, data were gathered on the specific types of behaviors the participant exhibited throughout the day. This was coded for eight time periods in two-hour blocks, starting at 6 AM and ending at 10 PM. Each time period was coded based on the predominant pattern of activity over a two-week period, as determined by the primary caregiver. Coding was as follows: 1= sleeping, either in bed or elsewhere; 2 = passive (awake but not doing anything); 3 = alert and engaged; and 4 = agitated. Formal caregivers were provided with detailed instructions on how to code the various behaviors. To verify that behaviors were coded accurately, research staff performed spot checks.

Using these data, participants were defined as having apathy if coded for at least one time period as passive and no time periods as agitated. Participants were coded as having agitation if they had at least one period of agitation and no periods of passivity. Participants were determined to have both behaviors if they experienced at least one period of passivity and at least one period of agitation. Three of the participants were rated as having apathy only, one had agitated behaviors only, and eight displayed both.

Instrumentation
The facility caregivers assessed frequency of agitated behaviors using the Cohen-Mansfield Agitation Inventory (CMAI)[46] and passivity with the Passivity in Dementia Scale[47] on day five of baseline and day 14 of the intervention. The CMAI is a 29-item caregiver-rating questionnaire for the assessment of agitation in elderly persons. It includes descriptions of 29 agitated behaviors, each rated on a 7-point scale of frequency.

Calming and alerting effects of interventions were measured during each intervention session using a biograph device. BVP and RR were recorded for later analysis. The biograph system is a battery operated fiberoptic biofeedback unit that directly records an intervention session on a laptop computer placed in the same room. Readings were taken during three sessions for each subject after a trusting relationship had been formed and the subject was comfortable around the interventionist and the equipment. The procedure was to attach the monitoring device to the subject, wait two minutes, take a baseline reading at two minutes, introduce the intervention, and 15 minutes into the intervention, take a second reading. In addition, staff observed and recorded the following information for each intervention during all sessions: time spent on intervention, percent of engagement with the intervention, active or passive participation, amount of encouragement needed, mood, and restlessness/agitation.

Table 1. Participant demographics			
Demographic indicator		**Frequency or mean**	**Percent or range**
Gender	Female	12	100
	Male	0	0
Age		mean, 85.54	range, 76.8 – 98.9
Ambulation status	Self	11	91.7
	Self with assistive device	1	8.3
Depression diagnosis	No	3	25.0
	Yes	9	75.0
Dementia type	Alzheimer's	6	50.0
	Other	1	8.3
	Parkinson's	1	8.3
	Mixed	1	8.3
	Unspecified	3	25.0
Antidepressant medication	No	9	75.0
	Yes	3	25.0
Daily medications		mean, 5	range, 0 – 12
Psychotropic medication	None	2	16.7
	Antipsychotic	3	25.0
	Antianxiety	1	8.3
	Sedative	1	8.3
	Poly-pharmacy	5	41.7
Facility activity participation	Little/none	4	33.3
	Occasional	6	50.0
	Frequent	2	16.7
Mini-Mental State Examination		mean, 8.33	range, 0 – 19
Global Deterioration Scale		mean, 6	range 4 – 6
Geriatric Depression Scale		mean, 3.83	range, 0 – 9
Target behavior	Apathy	3	25.0
	Agitation	1	8.3
	Apathy/disturbing	8	66.7

Intervention procedure

Based on the assessment information of physical and cognitive functions and leisure interests, the principal investigator prescribed the level of therapeutic cooking each participant required. A geriatric nurse practitioner wrote medical orders for the program specific to each participant. The activity was scheduled in the afternoon, one-half hour after lunch, which was appropriate since all of the participants typically displayed either passive or agitated behaviors during this time period. Tasks involved were adapted for each participant's ability levels to

maximize participation. Each group of four participants received two weeks of the cooking program five days per week. Mondays were for meal planning, Tuesdays involved a community outing for shopping, and the remaining three days were for the actual cooking. At the start of each session, all participants were encouraged to greet each other by name to foster socialization and friendship.

During the planning session days, the participants discussed then selected the types of food they wanted to make later that week. Recipe index cards, cookbooks, and magazines were provided for participants to look through to assist in making a selection. The types of foods prepared during the programs included garden and fruit salads; vegetable soup; lemonade; various pies, such as chocolate cream, banana cream, apple, and cherry; cookies; breads and butters; ice cream sundaes; personal pizzas; and applesauce. One participant made a shopping list of required ingredients based on the recipes chosen. Between sessions, research staff made simple, large print, step-by-step recipes of the chosen dishes. During the shopping portion of the program, participants used the shopping list to select and purchase items. On cooking days, every participant was given a large print copy of the recipe. One participant read the recipe step by step. Tasks like opening, cutting, and stirring were assigned to various members of the group based on ability levels (e.g., high-functioning--cut stems off of strawberries; mid-functioning—stir ingredients; low-functioning—in sealed container, shake heavy cream into whipped cream).

The system of Least Restrictive Prompts (LRP) was used to cue clients.[48] The LRP system was developed as a way for therapists to maximize active involvement of the client. The goal is to encourage active engagement and functional independence as much as possible. When using the LRP system, first identify the task to be completed (e.g., "It's time to stir the batter"). Use at least two less intrusive prompts before giving physical assistance. Less intrusive prompts include verbal prompts, gestures, and modeling (e.g., "Pick up the spoon. Stir the batter"). Always time prompts correctly, waiting five seconds between each prompt to give sufficient time for response. When resorting to physical assistance, gently assist the client to start the motion, using hand-over-hand help (e.g., place spoon in participant's hand, place your hand over participant's, and gently start motion). Remove your hand if the participant responds by performing the current step of the activity.

Participants in this study performed all tasks with research staff verbally cueing when needed. Few physical prompts were required other than occasional assistance to start a motion. After preparing then eating what was made, participants received their clean-up assignments, again based on abilities (high-functioningwash dishes in sink; mid-functioning—clear table; low-functioningwipe table with cloth or dry dishes).

Results

The hypothesis that older adults who participate in a therapeutic cooking program will have lower levels of disturbing behaviors than those who do not participate in such a program was answered based on the differences in pre- and post-test levels of the CMAI and Passivity in Dementia Scale between the treatment phase (while receiving the recreation program), and during the control phase (when not receiving the recreation program). Tables 2 and 3 present a statistical summary of these results.

CMAI scores were analyzed for agitated behaviors using a t-test for nonindependent samples with

Table 2. CMAI pre- and post-test differences				
		Mean	N	Significance
Overall	Pretest	2.2808	24	.003
	Post-test	1.8762	24	
Treatment	Pretest	2.30	12	.000
	Post-test	1.46	12	
Control	Pretest	2.2658	12	2.18
	Post-test	2.2958	12	

a two-tailed significance at the a = .05 level, as shown in Table 2. The control phase pretest means of 2.27 increased slightly at the post-test to 2.30, indicating a slight increase (+0.03) in agitation. The treatment phase pretest means of 2.30 decreased to 1.46 (-0.84) at the posttest denoting a decrease in agitation. The analysis of this variable determined that the difference in post-test CMAI means for the treatment phase was highly significant at the $p < 0.002$ level.

The passivity scores were analyzed for apathetic behaviors using a t-test for nonindependenderit samples with a two-tailed significance at the a = .05 level, as shown in Table 3. The control phase pretest means of 1.33 decreased slightly at the post-test to 1.29, indicating a slight increase (+0.04) in passive behaviors. The treatment phase pretest means of 1.29 increased to 2.58 (4-1.28) at the post-test, denoting a marked decrease in passivity. The analysis of this variable determined that the difference in post-test passivity means for the treatment phase was highly significant at the $p < 0.001$ level.

Biograph readings during the interventions recorded the subjects' physiological responses to the interventions. Biograph readings on selected intervention sessions found that change in BPV significantly correlated with change in observed behavior. Active engagement increased as BPV increased, and agitation decreased as BPV decreased ($p < .067$). Change in heart rate as measured via pulse also significantly correlated with changes in observed agitated behavior. These correlations are presented in Table 4. The readings were always consistent with staff

Table 3. The control phase pretest means of 1.33 decreased slightly at the post-test to 1.29, indicating a slight increase (+0.04) in passive behaviors. The treatment phase pretest means of 1.29 increased to 2.58 (+1.28) at the post-test, denoting a marked decrease in passivity. The analysis of this variable determined that the difference in post-test passivity means for the observation of subject response. It should be noted that interpretation of the readings was specific to target behaviors and not to specific intervention. An activity such as cooking might make an apathetic participant more alert and aware while having a calming affect on an agitated participant. This highlights the importance of matching intervention to a client's functioning ability and interests.

There were 38 biograph readings recorded during the cooking intervention in this study. Of these, 21 were attempts to alert the participant and 17 were attempts to calm the participant. Of the 21 alerting attempts, 18 were successful based on the physiological data from the biograph readings and three were not successful. Of the 17 calming attempts, all were successful based on the biograph readings. A chi-square analysis determined this to be highly significant at the 0.000 level.

The 12 subjects participated in 10 sessions each for a total of 120 interventions. The average time engaged in the therapeutic cooking group was 45 minutes. Engagement level was recorded by percentage

Table 3. Passivity pre- and post-test differences				
		Mean	N	Significance
Treatment	Pretest	1.33	12	.000
	Post-test	2.58	12	
Control	Pretest	1.3333	12	.586
	Post-test	1.2917	12	

Table 4. Biograph analysis					
Biograph outcome: HR/BPV					
Expected outcome (N = 38)		**Heart rate**		**Blood pressure variability**	
		Pretest	**Post-test**	**Pretest**	**Post-test**
Alerting (n = 21)		68.02	74.96	27.95	28.08
Significance*		.077		.975	
Calming (n = 17)		83.34	72.49	21.14	24.33
significance*		.000		.067	
Biograph outcome: Participants					
Desired outcome		**Heart rate (actual)**		**Total**	
		Alerting	**Calming**		
Alerting	Number	18	3	21	
	Percent	85.7	14.3	100	
Calming	Number	0	17	17	
	Percent	.0	100.0	100	
Total	Number	18	20	38	
	Percent	47.4	52.6	100	
* Chi-square significance = .000.					

during each session based on research staff observation of participants during the session. In this program, the overall engagement level was 90.4 percent.

The amount of encouragement needed by each participant was recorded during each session as follows: 0 = normal, 1= some additional encouragement needed, and 2 = much encouragement needed. From these data, normal encouragement was required 119 times, some additional encouragement was required six times, and much encouragement was needed five times. Active or passive engagement in the program was also recorded. During the 120 interventions, participation by subjects was active 119 times and passive one time. Restlessness was noted in one participant during two of the 120 intervention attempts. Mood during interventions was recorded as 118 enjoyed the activity, two were indifferent, and none exhibited weepiness or sadness.

Discussion

This cooking intervention study was part of a larger 107-subject study of recreational therapy interventions for disturbing behaviors conducted over a three-year period. Although this was a small sub- sample, the results do

indicate a positive affect on behaviors when cooking was used as a therapeutic intervention. In addition, participants had the opportunity to make choices, eat fresh fruits and vegetables, and smell natural, homelike aromas. The project was also able to mix individuals with various stages of cognitive impairments successfully. Care was taken to provide tasks that were functionally matched to the participants' abilities. Staff positioned themselves near those with deficits in

Table 5. Cooking program adaptation

	Level I	Level II	Level III
Ingredients to buy and adapt with all levels:			
Apples	Apple pie	Apple crisp	Applesauce
Cream	Homemade ice cream	Parfaits	Butter
Potatoes	Scalloped potatoes	Potato soup	Mashed potatoes
Bananas	Banana muffins	Banana cream pie	Banana smoothie
Eggs	Quiche	Egg salad	Custard
Task suggestions for different levels:			
	Writing shopping list, selecting groceries, reading recipe, cutting, peeling, measuring, timing	Two-step directions, mixing, decorating, stirring, pouring, washing dishes, setting and cleaning table	Stirring, shaking, mixing, decorating, drying dishes
Selecting recipes for diet consistency:			
	Regular	**Mechanical**	**Pureed**
	Ethnic foods	Pancake club	Applesauce
	Baking club	Soft pretzels	Bread and butter
Note: Avoid overly spicy foods	Gourmet salads	Cookies	Ice cream
	Picnic lunches	Soft fruit salad	Pudding
	Pizza	Rolls, biscuits	
		Soup	

following cues, prompts, and directions to ensure a less restrictive approach was used. Methods of adapting the cooking program are shown in Table 5.

Although there were direct benefits for all the participants, there were indirect benefits for other residents on the unit as well. The smells, sounds, and location of the program made it highly visible. Staff, family members, and residents frequently sat nearby to watch. This was particularly true of the male residents on the unit. Participants often enjoyed sharing their creations with other residents. Although the participants lived together on the unit, few appeared to have friendships with each other. Each day at the end of the program, the participants did not wish to split up but wanted to stay together as a group, and they would often remain together talking or going for a walk.

A problem regarding location arose when we finished our first group of four and started on the second group. The program took place in a prominent living area near both the kitchen and the living room. The first four participants, seeing the research staff. came and joined in, making eight participants. Fortunately, we had enough staff to manage this larger group by splitting them up into two tables. By the time we got to the last four participants, our group was up to 12, requiring yet more staff members to ensure small groups. The participants appeared to have bonded as a group and formed close friendships. Program integrity was maintained after the

project completion because of the social connections made. This is exactly the outcome a recreational therapist works toward, but it made accurate testing of the research results difficult.

Although offering a therapeutic cooking group 30 minutes after lunch may seem counterintuitive, it appears this may have been the appropriate time to engage participants in our study. The time of day during which the disturbing behaviors occur should always be taken into consideration and the intervention schedule adapted to target that time.

Future studies and conclusion

This project examined the effects of a therapeutic cooking program on one variable-behavior-on a small sample. The group tested lacked ethnic diversity, which was a limitation in this study. There are many other variables that need to be examined for future studies. These include the effects on food consumption, weight loss, and failure to thrive; the impact on psychoactive medication usage and depression; and the effects on ADLs, such as self-feeding. Outcomes with regard to verbalization, communication. and socialization could also be examined. Longer studies and those with a greater sample size should be pursued, and long-term effects should also be tested.

Mealtimes in group-living situations for older adults with dementia are often chaotic or unpleasant and may lead to behavior problems. The use of therapeutic cooking programs to motivate residents to attend, socialize, perform cognitive activities in a small group, and enjoy the shared experience has much promise. Added meaning occurs when residents plan the recipe, shop, prepare, and share the end product with others.

Fine food and good friends. What more could one ask for?

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