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# STRATEGIES FOR FEEDING PATIENTS WITH DEMENTIA

*How to individualize assessment and intervention based on observed behavior.*

**OVERVIEW:** Despite the high prevalence of dementia among elderly patients in hospitals and nursing homes and the strong association between dementia and feeding difficulty, few sources adequately address effective feeding interventions. Basing their discussion on the conceptual model that grew out of a previously published systematic literature review, the authors address a wide range of assessment and intervention practices specific to various observed behaviors that may aid in feeding patients with dementia.

**Keywords:** Alzheimer's disease, dementia, feeding difficulties, malnutrition

In the United States, nearly 14% of people over the age of 71 have some form of dementia.<sup>1</sup> People with dementia constitute roughly 25% of hospital patients ages 65 and older<sup>2</sup> and 47% of nursing home residents.<sup>3</sup> And more than half of them lose some ability to feed themselves,<sup>4</sup> which puts them at high risk for inadequate food intake and malnutrition. Patients who are unable to eat independently must rely on caregivers to assist them physically or with verbal prompts or cues during mealtimes. Unfortunately, caregivers may be unable to identify the various types of feeding problems that accompany dementia or unaware of the feeding practices required to address them.

Certified nursing assistants (CNAs) provide nearly all feeding assistance in long-term and acute care settings. Although they're trained in basic feeding techniques, CNAs may be unprepared for the challenges that arise when assisting people with dementia or fail to realize how the cognitive impairments associated with dementia may, in an institutional setting, be exacerbated by physical, psychological, social, environmental, or cultural factors.<sup>5</sup> Although CNAs are taught the skills to deal with specific feeding difficulties,<sup>6,7</sup> they must rely on nurses to assess particular





Green House facilities, such as the one shown in this photo, prepare meals in a homelike, open kitchen and serve residents at a large dining table where they can socialize with staff and visitors. Photo by Rollin Riggs / *New York Times* / Redux Pictures.

situations and guide them in how to intervene.

This article provides an overview of the feeding difficulties associated with dementia and suggests ways that caregivers might intervene to overcome them. We developed the conceptual model for the assessment and intervention strategies presented here after completing a comprehensive systematic literature review, which was published previously.<sup>5</sup> In conducting that review, we used concept analysis to characterize feeding difficulties associated with dementia and to identify their antecedents (contributing factors) and consequences (outcomes) (see Figure 1). Although the strategies we formulated based on that review and analysis may be used by family caregivers, this article focuses on tactics that formal caregivers can use in hospital or nursing home settings.

#### **ASSESSING FEEDING DIFFICULTIES**

In our previously published review,<sup>5</sup> we evaluated three instruments commonly used to measure feeding difficulties in patients with dementia: the Edinburgh

Feeding Evaluation in Dementia (EdFED), the Feeding Behaviors Inventory, and the Eating Behavior Scale (EBS). The EdFED<sup>8-12</sup> is an 11-item assessment tool designed to help clinicians determine the level of feeding assistance patients need based on observed eating and feeding problems. The Feeding Behaviors Inventory<sup>13</sup> directs clinicians to assess patients for 33 common, problematic mealtime behaviors associated with Alzheimer's disease in order to develop appropriate, individualized nursing care plans. The EBS<sup>14,15</sup> was developed by clinical nurses at the National Institutes of Health to help providers measure the functional ability of patients with Alzheimer's disease to perform six general eating behaviors. Our analysis revealed that, while the EdFED was an aid in assessing feeding difficulties, it didn't address many aspects of the common feeding difficulties in dementia (such as difficulty getting food into the mouth, chewing, swallowing, or paying attention to the task of eating); the Feeding Behaviors Inventory included more behaviors than the EdFED but failed to address antecedents or

consequences of feeding difficulties; and, while the EBS identified important types of feeding difficulties, it provided no observational criteria for determining whether the behaviors were present.<sup>5</sup>

### CONTRIBUTING FACTORS

In discussing the feeding difficulties associated with dementia, it's important to first consider their antecedents—the factors that contribute to these difficulties.

**Impaired cognitive function.** Dementia is associated with a progressive decline in short- and long-term memory, attention, and executive function. Initially, the only cognitive impairment may be a short-term memory deficit, which interferes with eating because it causes the patient to forget the task at hand or become easily distracted. As dementia progresses, impairments such as apraxia (the impaired ability to perform skilled or purposeful movements) and agnosia (the impaired recognition or comprehension of sensory stimuli) often emerge. Apraxia can interfere with patients' ability to use eating utensils, while agnosia can impair their ability to recognize food and know what should be done with it.

**Physical dysfunction.** Older adults commonly lose some of the fine motor skills required to get food from the plate into the mouth. In addition, altered smell and taste may reduce their appetite and food intake, while comorbid visual impairments may make it difficult for them to see food and utensils (particularly when there's little contrast between the table, the plate, and the food). Compounding these problems, people with dementia resulting from vascular changes in the central nervous system often lose the ability to control and coordinate chewing and swallowing. Dental problems (including poorly fitted dentures; missing, loose, or decayed teeth; and dental sensitivity), as well as poor

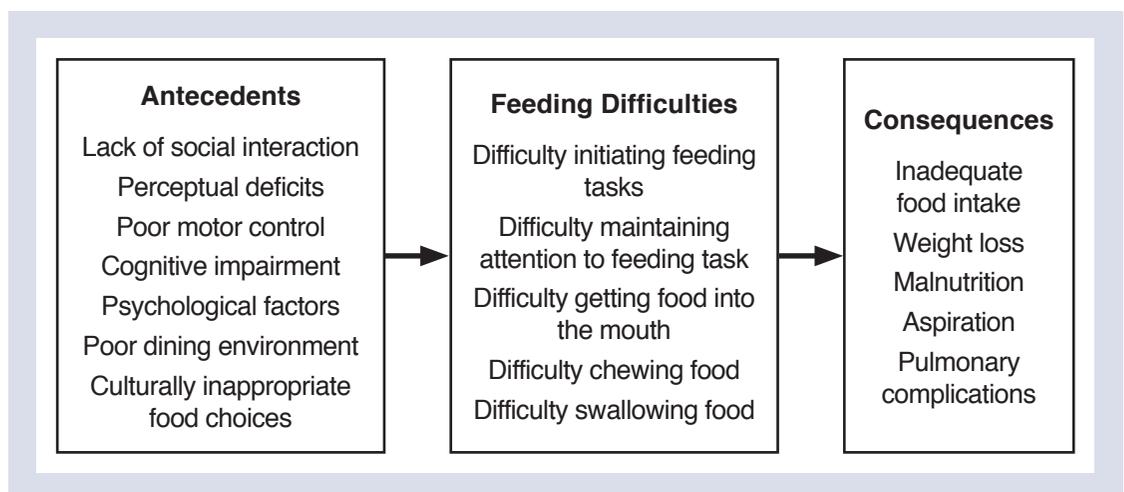
oral hygiene, may contribute to chewing difficulties, and ineffective chewing may exacerbate dysphagia, which is associated with gagging, coughing, and aspiration, in addition to poor nutrition.

**Psychological and social issues.** The prevalence of depression in dementia is estimated to be roughly 45%, both in long-term care facilities and in the community.<sup>16,17</sup> In patients with dementia, changes in functional or mental status and reports of pain may signal the onset of depression,<sup>18</sup> which can take the form of refusing food or feeding assistance, becoming withdrawn, or displaying aggression. Furthermore, some of the medications prescribed to treat depression and other psychological disorders (such as aggression, delusions, or hallucinations) may complicate feeding by producing somnolence or agitation.

**Environmental factors.** The dining environment plays an important part in the feeding process.<sup>13</sup> In dining rooms that are crowded and full of environmental distractions such as loud background noises, social conversations among staff, and very vocal or noisy diners, clinicians have observed that patients are impatient, agitated, and tend to have feeding problems.<sup>13</sup> Unfortunately, institutional mealtime environments are very often crowded, chaotic, and noisy, with frequent interruptions or distractions and trays often placed out of patients' reach.<sup>19</sup>

**Cultural considerations.** If the caregiver providing feeding assistance has different cultural expectations from those of the patient, it may reduce the quality of the patient's dining experience as well as the patient's food intake.<sup>20</sup> For example, in the Korean culture, older adults both expect and are expected to become dependent as a part of normal aging.<sup>21</sup> Such cultural expectations may affect not only the expression and identification of feeding difficulties but also the strategies

FIGURE 1. MODEL OF FEEDING DIFFICULTIES



Adapted with permission from Chang CC, Roberts BL. Feeding difficulty in older adults with dementia. *J Clin Nurs* 2008;17 (17):2266-74.

caregivers use to address them. A Korean caregiver may provide feeding assistance to an older family member even when it isn't needed because the culture fosters the idea that an adult child feeding a parent is simply healthy reciprocity.<sup>21</sup> By contrast, in Western culture, where greater emphasis is placed on independence,<sup>21</sup> caregivers may be more likely to help aging adults feed themselves.

Culture also influences food preferences and mealtime habits. Familiar presentations of foods common to a patient's culture have been found to improve intake.<sup>22</sup> For example, in a study of nursing home residents, serving Hispanic adults culturally familiar foods such as flour tortillas, beans and tortilla chips, shredded cabbage, cheese, and cilantro at meals improved resident intake.<sup>22</sup> It also might help to provide culture-specific eating utensils. Patients' food preferences may be found in the medical record, but medical records seldom contain information about patients' mealtime habits, such as whether they prefer to eat alone or while watching television. The most reliable sources for this information are family members and home caregivers.

and providing adequate space for the feeder to sit down and have eye contact with the patient encourages interaction between the two.

In some long-term care settings, there have been significant efforts to make the dining environment as homelike as possible. For example, facilities modeled after the Green House concept prepare meals in an open kitchen and serve them at a large dining table at which residents can socialize with staff and visitors.<sup>29</sup> Typically, meals are accompanied by soft music, tables are set with flowers, and mealtimes last for more than an hour. Similarly, the Eden Alternative strives to create a small homelike environment that enhances social interaction and supports the autonomy of residents.<sup>30</sup> In Eden homes, residents have 24-hour open access to snack foods of their choosing. Family-style meals, which recreate a homelike atmosphere by allowing residents to sit with each other at the dinner table and select food from serving bowls placed on the table, have been found to increase resident participation, appropriate communication at mealtimes, and the frequency of praise by CNAs assisting with feeding.<sup>31,32</sup> It's been suggested that increasing the aroma

## INSTITUTIONAL POLICIES THAT PROMOTE FAMILY INVOLVEMENT IN FEEDING AND SOCIAL INTERACTION BETWEEN PATIENTS AND CAREGIVERS SHOULD BE ENCOURAGED.

### SYSTEM SOLUTIONS

Some of the factors that contribute to feeding problems in patients with dementia are best managed at the system level, where changes in social policies and environmental design can be addressed.

Frequent social contact with family, friends, and children has been shown to significantly reduce depression in older adults.<sup>23</sup> In addition, interaction between nursing personnel and patients' family or friends may be essential for patients with dementia, who often have difficulty verbalizing the feeding difficulties they're experiencing, the assistance they need, or their food preferences. These social contacts may be the first to recognize a patient's feeding difficulties or to offer to provide assistance. Institutional policies that promote family involvement in feeding and social interaction between patients and caregivers should be encouraged,<sup>24</sup> as they contribute to patient health, both mental and physical, and strengthen the connection between patient and caregiver.<sup>25</sup>

Likewise, small changes in the dining environment can support self-feeding behaviors.<sup>26</sup> It's important that lighting be sufficient to contrast and illuminate food and utensils.<sup>27,28</sup> Likewise, avoiding overcrowding

of food preparation in the dining room may also reduce mealtime difficulties.<sup>33</sup> Research on the effects of these changes on eating behavior and caloric intake is required.

Dining room music has been used in some settings to increase food intake,<sup>34</sup> and it's thought to increase concentration and decrease agitated behavior,<sup>35-37</sup> though findings have been inconsistent, and no studies have established the type of music most effective in increasing food intake.

### NURSING INTERVENTIONS

Our clinical experience, together with the conceptual model that grew out of our literature review and concept analysis,<sup>5</sup> served as the basis for a system of assessing and managing feeding difficulties in patients with dementia. In the literature search for that review, which was conducted in PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), AgeLine, and Social Sciences Full Text, we used the following keywords and phrases: *feeding, eating, nutrition, malnutrition, feeding assessment, dementia, aging and concept analysis*, and *dementia and feeding*; we excluded the terms *enteral feeding, tube feedings,*

TABLE 1. ASSESSING AND MANAGING FEEDING DIFFICULTIES IN PATIENTS WITH DEMENTIA

TYPE OF FEEDING DIFFICULTY	OBSERVED BEHAVIOR	MULTIDISCIPLINARY STRATEGY	FEEDING STRATEGY
<b>Initiating Feeding</b>			
Refuses food or displays aversion toward food	<ul style="list-style-type: none"> <li>• Pushes feeder away</li> <li>• Pushes food away</li> <li>• Turns head</li> <li>• Spits out food</li> <li>• Refuses to open mouth</li> </ul>		<ul style="list-style-type: none"> <li>• Try to feed patient at another time<sup>39</sup></li> <li>• Seek help from another nursing assistant<sup>39</sup></li> <li>• Offer verbal encouragement<sup>40, 47, 50</sup></li> <li>• Sit down and make eye contact with patient while feeding<sup>33, 46, 51</sup></li> <li>• Ask patient and patient's family and friends about food preferences and try to include familiar foods in the diet<sup>6, 45</sup></li> <li>• Carefully try to part patient's lips and open mouth but <i>do not force</i><sup>43</sup> (firmly squeeze lips between thumb and forefinger, then quickly release; place fingers under jaw, firmly and quickly pressing upward and then releasing)</li> </ul>
Violent reaction to feeding	<ul style="list-style-type: none"> <li>• Hits feeder</li> <li>• Throws food at feeder</li> <li>• Hits eating utensils as feeder attempts to assist</li> <li>• Verbally abuses feeder</li> </ul>		<ul style="list-style-type: none"> <li>• Try to feed patient at another time<sup>39</sup></li> <li>• Introduce quiet or relaxing music to reduce agitated behavior<sup>34-37</sup></li> </ul>
Refuses feeding assistance	<ul style="list-style-type: none"> <li>• Verbally complains about eating</li> </ul>	<ul style="list-style-type: none"> <li>• If physical ability to feed self is impaired, refer to occupational therapist for adaptive utensils</li> </ul>	<ul style="list-style-type: none"> <li>• Determine whether verbal complaints are valid and respond accordingly</li> <li>• Provide adequate time for patient to feed self.<sup>27, 43, 48, 50</sup> If physical ability to feed self is impaired, offer finger foods<sup>38, 46</sup></li> </ul>
Unable to see plate on table or food on plate	<ul style="list-style-type: none"> <li>• Has difficulty locating plate on table or food on plate</li> </ul>	<ul style="list-style-type: none"> <li>• Refer for visual acuity testing to determine whether glasses are needed</li> </ul>	<ul style="list-style-type: none"> <li>• Use color to increase contrast between plate, table, and food<sup>27, 41</sup></li> <li>• Check that glasses are in place during mealtime<sup>33, 46</sup></li> </ul>
<b>Maintaining Attention</b>			
Patient is distracted	<ul style="list-style-type: none"> <li>• Cannot start eating when instructed to do so</li> </ul>		<ul style="list-style-type: none"> <li>• Provide verbal encouragement<sup>40, 47, 50</sup></li> <li>• Remind patient of motor behaviors needed to get food from plate to mouth using a hand-over-hand approach (holding patient's hand and moving it from mouth to food and back again)<sup>33, 43</sup></li> <li>• Increase oral stimulation by offering ice or cold water before eating<sup>43</sup></li> </ul>

<p>Patient is too drowsy to eat or is difficult to awaken</p>	<ul style="list-style-type: none"> <li>Doesn't continue to eat after starting</li> <li>Leaves pockets of food in the area of the buccal mucosa</li> <li>Cannot sit still, gets up from chair, or leaves table</li> <li>Falls asleep while eating</li> <li>Is difficult to rouse, even after verbal requests and physical contact</li> </ul>	<ul style="list-style-type: none"> <li>Discontinue or reduce dose of medications that may cause drowsiness</li> </ul>	<ul style="list-style-type: none"> <li>Provide verbal encouragement<sup>40, 47, 50</sup></li> <li>Introduce music to create an environment conducive to dining<sup>37</sup> and to stimulate eating<sup>34</sup></li> <li>Remove environmental distractions (for example, turn off the TV or move to another room)<sup>13, 27, 28</sup></li> <li>Stimulate the appetite by using aromatic ingredients, such as onions, in food preparation or by offering foods of different colors or textures<sup>27</sup></li> <li>Provide finger foods patient can eat while away from table<sup>27, 49</sup></li> <li>Provide verbal encouragement<sup>40, 47, 50</sup></li> <li>Add gentle touch to verbal encouragement<sup>33</sup></li> <li>Try to feed patient at another time<sup>39</sup></li> </ul>
<b>Getting Food into Mouth</b>			
<p>Unable to move food from plate into mouth</p> <p>Unable to keep food in mouth</p>	<ul style="list-style-type: none"> <li>Lacks motor ability to feed self</li> <li>Food dribbles out of mouth</li> <li>Unable to keep mouth closed while chewing</li> </ul>	<ul style="list-style-type: none"> <li>Refer to physical or occupational therapy for evaluation, task modification, or rehabilitation</li> <li>If assessment reveals motor difficulty, refer to speech and language therapist for oral movement retraining<sup>44</sup></li> </ul>	<ul style="list-style-type: none"> <li>Provide utensils that compensate for poor motor ability<sup>27</sup> (for example, utensils with large handles, designed for patient's dominant hand)</li> <li>Allow patient to use hands to feed self<sup>42</sup></li> <li>Use more solid foods</li> <li>Use hands to help patient close mouth</li> </ul>
<b>Chewing Food</b>			
<p>Ineffective chewing</p>	<ul style="list-style-type: none"> <li>Chewing fails to reduce food to a form that can be swallowed</li> <li>Starts to chew but not long enough to convert food to a consistency that can be swallowed</li> </ul>	<ul style="list-style-type: none"> <li>Refer patient to dentist to treat dental problems or ensure dentures fit well</li> </ul>	<ul style="list-style-type: none"> <li>Cut food into small pieces or change patient's diet from solid to soft or semiliquid food.<sup>27, 48, 51</sup></li> <li>Cut food into small pieces to speed the effects of chewing<sup>27</sup></li> </ul>
<b>Swallowing Food</b>			
<p>Aphagia</p>	<ul style="list-style-type: none"> <li>Gagging and choking when trying to swallow</li> <li>Aspiration</li> <li>Multiple attempts to swallow food</li> </ul>	<ul style="list-style-type: none"> <li>Refer to speech and language therapist to assess swallowing</li> <li>Have oral suction available at mealtime</li> <li>Put patient on aspiration precautions</li> </ul>	<ul style="list-style-type: none"> <li>Seat patient at a 90° angle<sup>51</sup></li> <li>Use thickening agent in drinks<sup>46, 51</sup></li> <li>Assist patient in swallowing by gently stroking throat, moving from base of anterior neck toward jaw<sup>43</sup></li> </ul>

PEG, and *enteral nutrition*. The search yielded 71 distinct, relevant, English-language articles. The assessment and intervention strategies we subsequently devised extend the general guidelines for mealtime difficulties developed by Amella<sup>24</sup> and are targeted toward feeding difficulties common in people with dementia.

Although such feeding difficulties represent a significant clinical problem, few sources adequately address intervention, either because interventions and outcomes across studies haven't been standardized or because intervention studies lack statistical power or fail to account for confounding factors.<sup>37</sup> The majority of feeding strategies we've compiled are based on descriptive and cross-sectional studies or expert opinion; in addition, we referenced some sources that relied on systematic reviews and some that used experimental design.

ranging from being difficult to rouse to being unable to remain awake during mealtimes). While turning off a TV or using more aromatic ingredients in meals may be enough to encourage the distracted patient who fails to eat or stores food, the patient who's unable to remain seated during mealtime may benefit most from a meal of finger foods that can be eaten while walking. Drowsy patients should be evaluated for a possible reduction or discontinuation of medications known to cause somnolence, though verbal encouragement and a gentle touch may improve attentiveness.

A comprehensive approach to assessing and managing feeding difficulties in patients with dementia is necessarily multidisciplinary. Some behaviors associated with feeding difficulty suggest a need for evaluation by a physical or occupational therapist, visual acuity testing, dental examination, or speech or language therapy.

## WHEN THERE'S CONSISTENCY IN PATIENT CARE ASSIGNMENTS, CNAs REPORT THAT THEY'RE BETTER ABLE TO INTERPRET FEEDING BEHAVIORS AND IDENTIFY EFFECTIVE FEEDING STRATEGIES.

In our literature review, we identified five general types of feeding difficulties involving the following tasks: initiating the feeding, maintaining attention, getting food into the mouth, chewing food, and swallowing food.<sup>3</sup> In Table 1<sup>5, 13, 27, 28, 33-51</sup> of this article, within each of those general areas, we describe several specific manifestations, the observable behavior associated with each, and the multidisciplinary and feeding strategies often cited as effective in addressing these problems in patients with dementia.

Difficulty in initiating feeding may take the form of food refusal, aversion to food, or violent reactions to feeding. With food refusal or aversion, the patient may push the feeder or the food away, turn away, spit out the food, or refuse to open the mouth. Feeding strategies include offering verbal encouragement, sitting down and making eye contact with the patient, asking the patient or family members about food preferences so that familiar favorites may be incorporated into the diet, or, if those fail, postponing the feeding or asking another CNA to offer assistance. On the other hand, if the patient's reaction is violent—hitting utensils or the feeder, throwing food at or verbally abusing the feeder—the better approach may be to introduce quiet or relaxing music to reduce the patient's agitation and outbursts.

Attention issues may take the form of excessive distractibility (marked by the failure to start or continue eating, storing pockets of food within the cheeks, or being unable to sit still) or drowsiness (with behavior

Although these strategies haven't been validated in randomized clinical trials, they've repeatedly been endorsed by expert opinion and described as effective in observational and case studies, survey research, and literature reviews. In presenting them, our goal is to help caregivers individualize assessment and intervention practices in patients with dementia.

### ALLOCATING PERSONNEL

When there's consistency in patient care assignments, CNAs report that they're better able to interpret feeding behaviors and identify effective feeding strategies.<sup>25</sup> Unfortunately, such consistency is rare. In one study of 214 patients who required feeding assistance, 110 of whom had dementia, patients had a median of 16 to 20 different feeders during a four-week period.<sup>52</sup> Having this many feeders reduces the patient's familiarity with the feeder, which is essential for good communication between them, as well as the feeder's familiarity with the patient's food preferences, feeding difficulties, and effective management strategies. It's difficult to determine whether such practices are typical because research on the subject is so limited. To reduce feeding difficulties, therefore, health care settings should provide an adequate number of well-trained personnel for feeding assistance, and maintain consistency between feeders and patients.

In long-term care settings, trained, nonnurse feeding assistants can be of great help during mealtimes<sup>53</sup> by feeding residents with uncomplicated feeding needs,<sup>54</sup>

thereby leaving CNAs free to assist those with complex feeding needs. To ensure the safety of residents, it's critical that CNAs not be assigned to provide other types of nursing care during mealtimes, but remain on hand to serve in a supervisory role and manage the more challenging feeding cases.

### MONITORING OUTCOMES

Inadequate food intake, weight loss, malnutrition, aspiration, and pulmonary complications are adverse outcomes associated with feeding difficulties.<sup>5</sup> Malnutrition should be assessed at least monthly, taking into account calories consumed and body weight or body mass index. Noting a progressive decline in caloric intake can allow for intervention before significant weight loss has occurred. A registered dietitian usually calculates calorie counts over a period of at least three days. For an accurate intake record, all food should be weighed and consumption recorded.<sup>26</sup> In addition to calorie counts, protein consumption can be obtained and tracked, based on estimates of meal portions eaten.<sup>55</sup>

### SUGGESTIONS FOR FUTURE RESEARCH

Few studies have evaluated the efficacy of interventions to address feeding difficulties in patients with dementia, and most have methodologic limitations.<sup>37</sup> In order to generate targeted interventions for this patient population, investigators need to develop instruments by which they can assess all types of feeding difficulties, apart from their contributing factors, and then move on to gauging outcomes, such as fluid and nutritional status and pulmonary complications. To support such interventions, researchers need to conduct more experimental studies, including those with large sample sizes, in a variety of settings, and employing various types of caregivers. In particular, there's a paucity of research in settings other than long-term care facilities. Although findings from long-term care studies may be applicable to other settings, any existing differences must be articulated.

Further research is needed to evaluate whether CNA training in feeding assessment and intervention reduces feeding difficulties in patients with dementia. One small study evaluated the effects of a CNA feeding skills program on participants' knowledge of, attitude toward, and behavior when dealing with feeding difficulties in patients with dementia.<sup>6</sup> Outcomes data were limited, however, by the small size of the sample. Randomized clinical trials are needed to assess the benefit of educational programs on feeding difficulties for nursing assistants and nonnurse feeding assistants.

The strategies presented here should be carefully adapted to the health care settings in which feeding assistance is provided and used, with close attention paid to their efficacy and appropriateness for each patient and provider. Because patients with dementia are often unable to communicate their needs, family

members may be the first to identify feeding difficulties or to initiate interventions to address these difficulties. Nursing personnel may find it helpful to work with families to identify patient feeding preferences, as well as to interpret the meaning of the patients' body language and verbal expressions. CNAs further benefit from consistency in patient assignments, which enables them to become familiar with the needs of specific patients and respond accordingly.

Feeding difficulties faced by patients with dementia are common, multifactorial, and threaten both fluid and nutritional intake. To be successful, assessment and intervention strategies must account for the cognitive, physical, psychological, social, environmental, and cultural factors that can contribute to, reduce, or prevent these difficulties. Such strategies require a multidisciplinary approach that includes nurses; CNAs; occupational, physical, and speech therapists; patients' family members; and, possibly, nonnurse feeding assistants. In addition to promoting fluid and nutritional intake, early intervention may enhance the dining experience of patients with dementia by increasing the pleasure they associate with food. ▼

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### REFERENCES

1. Plassman BL, et al. Prevalence of dementia in the United States: the aging, demographics, and memory study. *Neuroepidemiology* 2007;29(1-2):125-32.
2. Alzheimer's Association. 2010 Alzheimer's disease facts and figures. *Alzheimers Dement* 2010;6(2):158-94.
3. American Health Care Association. *OSCAR data report: nursing facility patient characteristics report, June 2009 update*. Washington, DC; 2009. [http://publish.ahcancal.org/research\\_data/oscar\\_data/NursingFacilityPatientCharacteristics/HISTORICAL\\_HSNF\\_OSCAR%20Data%20Report\\_2009Q2.pdf](http://publish.ahcancal.org/research_data/oscar_data/NursingFacilityPatientCharacteristics/HISTORICAL_HSNF_OSCAR%20Data%20Report_2009Q2.pdf).
4. LeClerc CM, et al. A feeding abilities assessment for persons with dementia. *Alzheimers Care Q* 2004;5(2):123-33.
5. Chang CC, Roberts BL. Feeding difficulty in older adults with dementia. *J Clin Nurs* 2008;17(17):2266-74.
6. Chang CC, Lin LC. Effects of a feeding skills training programme on nursing assistants and dementia patients. *J Clin Nurs* 2005;14(10):1185-92.
7. Kelley MF. Social interaction among people with dementia. *J Gerontol Nurs* 1997;23(4):16-20.

8. Stockdell R, Amella EJ. The Edinburgh Feeding Evaluation in Dementia Scale: determining how much help people with dementia need at mealtime. *Am J Nurs* 2008;108(8):46-54.
9. Watson R. Measuring feeding difficulty in patients with dementia: replication and validation of the EdFED Scale #1. *J Adv Nurs* 1994;19(5):850-5.
10. Watson R. Measuring feeding difficulty in patients with dementia: developing a scale. *J Adv Nurs* 1994;19(2):257-63.
11. Watson R. Measurement of feeding difficulty in patients with dementia. *J Psychiatr Ment Health Nurs* 1994;1(1):45-6.
12. Watson R, Deary IJ. Measuring feeding difficulty in patients with dementia: multivariate analysis of feeding problems, nursing intervention and indicators of feeding difficulty. *J Adv Nurs* 1994;20(2):283-7.
13. Durnbaugh T, et al. Assessing problem feeding behaviors in mid-stage Alzheimer's disease. *Geriatr Nurs* 1996;17(2):63-7.
14. Tully MW, et al. The Eating Behavior Scale: a simple method of assessing functional ability in patients with Alzheimer's disease. *J Nutr Health Aging* 1998;2(2):119-21.
15. Tully MW, et al. The Eating Behavior Scale. A simple method of assessing functional ability in patients with Alzheimer's disease. *J Gerontol Nurs* 1997;23(7):9-15.
16. Fernandez M, et al. Behavioural symptoms in patients with Alzheimer's disease and their association with cognitive impairment. *BMC Neurol* 2010;10:87.
17. Kverno KS, et al. Prevalence and treatment of neuropsychiatric symptoms in advanced dementia. *J Gerontol Nurs* 2008;34(12):8-15.
18. Lundquist RS, et al. Comorbid disease in geriatric patients: dementia and depression. *Am Fam Physician* 1997;55(8):2687-94, 2703-4.
19. Van Ort S, Phillips L. Feeding nursing home residents with Alzheimer's disease. *Geriatr Nurs* 1992;13(5):249-53.
20. Sidenvall B. Meal procedures in institutions for elderly people: a theoretical interpretation. *J Adv Nurs* 1999;30(2):319-28.
21. Yeon KC. Elder care in Korea: the future is now. *Ageing Int* 2000;26(1/2):25-37.
22. Evans BC, Crogan NL. Building a scientific base for nutrition care of Hispanic nursing home residents. *Geriatr Nurs* 2006;27(5):273-9.
23. Fan MY, Young Y. *Social interaction and depression among older adults* [meeting abstract]. Academy for Health Services Research and Health Policy Meeting; Baltimore, MD; 2002. <http://gateway.nlm.nih.gov/MeetingAbstracts/ma?f=102274154.html>.
24. Amella EJ. Mealtime difficulties. In: Capezuti E, et al., editors. *Evidence-based geriatric nursing protocols for best practice*. 3rd ed. New York: Springer Publishing Company; 2008. p. 337-51.
25. Athlin E, Norberg A. Interaction between patients with severe dementia and their caregivers during feeding in a task-assignment versus a patient-assignment care system. *European Nurse* 1998;3(4):215-27.
26. Amella EJ. Assessment and management of eating and feeding difficulties for older people: a NICHE protocol. *Geriatr Nurs* 1998;19(5):269-74.
27. Hall GR. Chronic dementia. Challenges in feeding a patient. *J Gerontol Nurs* 1994;20(4):21-30.
28. McDaniel JH, et al. Impact of dining room environment on nutritional intake of Alzheimer's residents: a case study. *Am J Alzheimers Dis Other Dement* 2001;16(5):297-302.
29. NCB Capital Impact. *The Green House concept*. Arlington, VA. n.d. <http://www.ncbdc.org/default.aspx?id=148>.
30. Eden Alternative. *The Eden alternative and convivium. Following the path to mastery: the art of creating a caring community*. Wimberley, TX; n.d.; <http://www.edenalt.org/how-we-serve/spreading-the-word>.
31. Altus DE, et al. Using family-style meals to increase participation and communication in persons with dementia. *J Gerontol Nurs* 2002;28(9):47-53.
32. Nijs KA, et al. Effect of family style mealtimes on quality of life, physical performance, and body weight of nursing home residents: cluster randomised controlled trial. *BMJ* 2006;332(7551):1180-4.
33. Amella EJ. Feeding and hydration issues for older adults with dementia. *Nurs Clin North Am* 2004;39(3):607-23.
34. Ragneskog H, et al. Influence of dinner music on food intake and symptoms common in dementia. *Scand J Caring Sci* 1996;10(1):11-7.
35. Hicks-Moore SL. Relaxing music at mealtime in nursing homes: effects on agitated patients with dementia. *J Gerontol Nurs* 2005;31(12):26-32.
36. Ragneskog H, et al. Dinner music for demented patients: analysis of video-recorded observations. *Clin Nurs Res* 1996;5(3):262-82.
37. Watson R, Green SM. Feeding and dementia: a systematic literature review. *J Adv Nurs* 2006;54(1):86-93.
38. Biernacki C, Barratt J. Improving the nutritional status of people with dementia. *Br J Nurs* 2001;10(17):1104-14.
39. Chang CC, Roberts BL. Cultural perspectives in feeding difficulty in Taiwanese elderly with dementia. *J Nurs Scholarsh* 2008;40(3):235-40.
40. Coyne ML, Hoskins L. Improving eating behaviors in dementia using behavioral strategies. *Clin Nurs Res* 1997;6(3):275-90.
41. Ellexson MT. Access to participation: occupational therapy and low vision. *Top Geriatr Rehabil* 2004;20(3):154-72.
42. Ford G. Putting feeding back into the hands of patients. *J Psychosoc Nurs Ment Health Serv* 1996;34(5):35-9.
43. Hellen CR, et al. Eating-mealtime: challenges and interventions. In: Kaplan M, Hoffman SB, editors. *Behaviors in dementia: best practice for successful management*. Baltimore, MD: Health Professions Press; 1998. p. 193-226.
44. Jacobsson C, et al. Outcomes of individualized interventions in patients with severe eating difficulties. *Clin Nurs Res* 1997;6(1):25-44.
45. Kayser-Jones J. Improving the nutritional care of nursing home residents. *Nursing Homes* 2000;49(10):56-9, 113-14.
46. Kindell J. *Feeding and swallowing disorders in dementia*. Milton Keynes, UK: Speechmark Publishing Ltd.; 2002.
47. Lange-Alberts ME, Shott S. Nutritional intake. Use of touch and verbal cuing. *J Gerontol Nurs* 1994;20(2):36-40.
48. McGillivray T, Marland GR. Assisting demented patients with feeding: problems in a ward environment. A review of the literature. *J Adv Nurs* 1999;29(3):608-14.
49. Morris J, Volicer L. Nutritional management of individuals with Alzheimer's disease and other progressive dementias. *Nutr Clin Care* 2001;4(3):148-55.
50. Simmons SF, Schnelle JF. Feeding assistance needs of long-stay nursing home residents and staff time to provide care. *J Am Geriatr Soc* 2006;54(6):919-24.
51. Wasson K, et al. Food refusal and dysphagia in older people with dementia: ethical and practical issues. *Int J Palliat Nurs* 2001;7(10):465-71.
52. Bäckström A, et al. Feeding difficulties in long-stay patients at nursing homes. Caregiver turnover and caregivers' assessments of duration and difficulty of assisted feeding and amount of food received by the patient. *Int J Nurs Stud* 1987;24(1):69-76.
53. Simmons SF, et al. A preliminary evaluation of the paid feeding assistant regulation: impact on feeding assistance care process quality in nursing homes. *Gerontologist* 2007;47(2):184-92.
54. Hutlock T. The "feeding assistant rule": pros and cons. *Nursing Homes* 2004;53(1):42-4.
55. Berrut G, et al. Estimation of calorie and protein intake in aged patients: validation of a method based on meal portions consumed. *J Gerontol A Biol Sci Med Sci* 2002;57(1):M52-M56.