

Hand-Feeding Nursing Facility Residents with Dementia Competency Training Modules

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Hand-Feeding Nursing Facility Residents with Dementia Competency Training Modules**Abstract**

Problem: Residents with dementia are at a greater risk for developing dehydration and malnutrition due to a decline in cognitive and physical function. The Director of Nursing (DON) at the facility expressed concern for the lack of staff skill to adequately provide hand-feeding assistance to residents with dementia. The DON discussed concern for residents' risk for malnutrition due to a lack of staff skill.

Purpose: The purpose of this quality improvement (QI) project was to implement and evaluate the use of the evidence-based *Hand-Feeding Nursing Facility Residents with Dementia* competency training modules on assistive hand-feeding techniques within a long-term care setting, to change direct care workers' (DCW) feeding-assistance behavior.

Methods: The methodology included providing DCWs ($n=9$) with the virtual *Hand-Feeding Nursing Facility Residents with Dementia* competency training modules, a program co-developed by Dr. Melissa Batchelor-Murphy with the Texas Health and Human Services Commission and the Texas Health and Human Services Quality Monitoring Program, based on current evidence-based hand-feeding techniques and recommendations. A train-the-trainer strategy was utilized, and a registered nurse project champion was trained on the competency modules and how to perform the post-training skills-check using a competency checklist. Pre- and post-training surveys as well as baseline and post-training final interviews of the DCWs were completed to evaluate their utilization of skills and perceived benefits of the training.

Results: Pre-training, 55.6% of the DCWs reported via a survey that it was a challenge to assist a resident with dementia during mealtimes when they exhibited difficult feeding behaviors. Post-training, eight (89%) participants reported utilization of the information and skills learned from

the training, which they felt improved managing residents' challenging mealtime behaviors.

During a final interview, all the staff reported that the competency training modules were very helpful and beneficial to the residents and their mealtime experience or their nutritional state.

Conclusions: Online competency training modules improved DCWs knowledge and skill to provide hand-feeding assistance to residents with dementia. Sustainability of the project was achieved through a train-the-trainer strategy and the DCWs holding each other accountable to continue the practice change.

Introduction

Behavioral and psychological disturbances are common features in all types of dementia, and 80-90% of residents with dementia experience at least one distressing behavioral feature (Resnick, 2019). Both psychological symptoms and behaviors have been associated with residents drinking and eating less (Herke et al., 2018). More than half of all residents with dementia in LTC facilities are malnourished (BMI<20) and weight loss contributes to a more rapid progression of the disease (Meijers et al., 2014). As a result, residents with dementia often require feeding assistance to obtain adequate nutrition. In a long-term care (LTC) facility in rural Maryland, the director of nursing (DON) expressed concerns about staff's behavior and lack of skills to provide residents with dementia hand-feeding assistance. The DON expressed concern for residents' nutrition status and their risk for malnutrition due to DCWs lack of hand-feeding skills.

The purpose of this quality improvement (QI) project was to implement and evaluate the use of the evidence-based *Hand-Feeding Nursing Facility Residents with Dementia* competency training modules on assistive hand-feeding techniques within a long-term care setting. The intended effect of the practice change was to change DCWs feeding-assistance behavior by utilizing direct hand, under hand and over hand feeding techniques to ensure high quality feeding-assistance. Residents with dementia in this unit would secondarily benefit by optimizing nutritional intake.

Evidence Review

This evidence review specifically focused on evidence that supported: a) the need to implement staff competency training and education; b) the benefits of staff changing their assistive feeding behaviors; and 3) the efficacy of Over Hand, Under Hand and Direct Hand

assistive feeding techniques. The literature evaluated major themes, including the efficacy of education and training for nursing home staff, and the efficacy of assistive hand-feeding techniques. See Appendix A for an evidence review table based on Melynk's hierarchy of evidence (Melynk & Fineout-Overholt, 2019).

The need to provide competency training and education for DCWs was supported by several studies. In one descriptive study, nursing assistants were found to provide the majority of care to nursing home residents, but are were the least educated (Lerner et al. 2010). Lerner et al. (2010) examined knowledge acquisition and application of an additional nursing assistant educational program, and the researchers found that there was significant improvements on the mean scores of the *Advanced Nursing Assistant Knowledge Tests*, following the educational program by over 15%. Mueller et al. (2015) found that web-based training modules for staff regarding assistive hand-feeding techniques lead to significantly higher *Nursing Home Staff Knowledge of Feeding Assistance* scores, compared to a control group ($p=.001$). Liu et al. (2018) found that most barriers leading to residents with dementia experiencing negative functional and nutritional outcomes during mealtimes were related to caregiver factors. In addition to increased staff knowledge, web-based training modules significantly improve staff feeding skills when observed (Mueller et al., 2015). Similarly, Liu et al. (2015) found that staff education and skill trainings regarding best practices in assisting residents with dementia during mealtimes improved residents' ability to independently consume solid and liquid food.

Over hand, under hand and direct hand assistive hand-feeding techniques have been found to: a) increase resident meal intake, b) improve resident mealtime behaviors, and c) does not increase the length of time it takes DCWs to provide feeding assistance. Two groups of investigators found that the use of assistive hand-feeding techniques significantly increased the

percentage of residents' meal intake (Batchelor-Murphy et al., 2017; Mueller et al., 2015). In both studies, they measured the percentage of meal intake by weighing a resident's meal tray with all assistive feeding objects, pre- and post-meal. They found that DCW's use of one or more assistive hand-feeding technique resulted in a significant improvement in residents' mealtime behaviors. They also measured resident mealtime behaviors using the *Edinburgh Feeding Evaluation in Dementia (EdFED)* tool, an observational tool that was validated and had an inter-rater reliability of 0.43-0.59 (Batchelor-Murphy et al., 2017). Lastly, evidence from both studies revealed that utilization of one or more assistive hand-feeding technique does not increase the length of time DCWs spend providing feeding assistance to a resident with dementia, measured by use of a standardized protocol and stopwatch (Batchelor-Murphy et al., 2017; Mueller et al., 2015). Use of objective measurements increased the quality of evidence, reduced result bias and increased reliability and validity of results.

Theoretical Framework

The Social Ecological Model (SEM) was used as the framework for this quality improvement project to understand the relationships among interpersonal, intrapersonal, environmental and policy factors that influence health. The SEM is a framework that suggested that individuals are a part of larger social systems, and the characteristics of individuals and environments interact and influence health outcomes (Sallis et al., 2008). The framework provided conceptualization and understanding of the association of the many factors that influenced staff's prior feeding behaviors (Butts & Rich, 2018). At the center of the SEM are intrapersonal factors, which included components related to resident's cognitive impairment, mood and behavioral disturbances that influenced staff's prior mealtime behaviors. At the interpersonal level, staff's prior assistive feeding behaviors were influenced by caregiver-

resident factors such as the lack of DCWs' knowledge and skills to perform assistive feeding techniques. The third level of the SEM were the environmental factors that influenced staff's prior assistive feeding techniques, including cultural norms of the unit. The last level of the SEM was the policy factors that influenced staff's prior feeding behaviors, such as the lack of initial and annual training on assistive-feeding practices for staff.

The concepts in the model were leveraged to bring about the practice change through the selection of strategies and tactics to bring about the practice change. For example, at the intrapersonal level, staff were educated on the dementia disease and how it influenced residents' feeding abilities and the associated challenges. At the interpersonal level, the competency training modules were used to enhance staff's knowledge of the dementia disease and equip them with the necessary assistive-feeding techniques and skills for managing residents' changing mealtime behaviors. The intervention evoked empathy, impacting both the intrapersonal and interpersonal relationship. At the environmental level, a unit champion was leveraged to serve as a role model and created a unit culture that encouraged use of learned skills.

Methods

The project was implemented in a LTC unit that had a maximum resident census of thirty-four. Residents on this unit required skilled nursing care and had a range of cognitive impairment and dementia. The QI project team included the facility's Director of Nursing (DON), and Dr. Melissa Batchelor-Murphy, a content expert and cofounder of the training program. DCWs included two registered nurses (RN), one of which was the project champion, and seven geriatric nursing assistants (GNAs) who participated in the project and were chosen by the DON and were directly involved in the provision of resident meals. The participants worked during day-shift (0700-1500, or 1500-1900). The *Hand-Feeding Nursing Facility Residents with Dementia* competency training modules were co-developed by Dr. Melissa Batchelor-Murphy

with the Texas Health and Human Services Commission and the Texas Health and Human Services Quality Monitoring Program, based on current evidence-based hand-feeding techniques and recommendations. Content from each module were taught to the project champion through an online two-way audio-visual platform. The project champion was also trained how to perform the post-training skills check with participants. The project champion trained the individual DCWs, then completed the post-training skills check for each participant, assuring staff competency on performance of the evidence-based assistive hand-feeding techniques.

Baseline data was collected through pre-training survey responses from DCWs regarding prior training and use of special hand-feeding techniques (Appendix B), as well as through a virtual interview with each participant to discuss prior challenging resident behaviors and DCW's management techniques (Appendix C). Implementation strategies used for participants' completion of the *Hand-Feeding Nursing Facility Residents with Dementia* competency training modules and the Mealtime Skills Competency Checklist(s) (Appendix D), included utilization of a train the trainer tactic, utilizing the project champion. This tactic was adjusted based upon COVID restrictions which did not allow project leaders into the facility. The processes tracked during implementation to assess the impact of the QI project included DCWs' self-report of utilization of the hand-feeding techniques while assisting residents with dementia during mealtimes. Implementation strategies to gain outcome data included the use of a post-training survey (Appendix E) to gather DCW's self-report of their utilization of skills, which allowed participants to answer honestly, without response bias. Another strategy used was hosting a virtual live interview (Appendix F) with each participant, to verbally discuss the utilization of the hand-feeding techniques learned, the impact it had on the residents' mealtime experiences,

improved management of challenging mealtime behaviors, and improved meal intake by residents.

The structures tracked during implementation to assess the impact of the QI project included the number of participants that completed the *Hand-Feeding Nursing Facility Residents with Dementia* competency training modules and passed the post-training Mealtime Skills Competency Checklist. Completion of, and a passing score (score of 100%) of the respective skills check signified the positive impact of the training modules on the DCW's skill and knowledge of evidence-based hand-feeding techniques. Both structures were measured weekly during implementation.

Prior to implementation, to ensure the protection of human subjects, a proposal was submitted to the University of Maryland Baltimore Human Research Protection Office (HRPO) for review, and was granted a Non-Human Subjects Research. Measures that protected the confidentiality and privacy of individuals included deidentifying all participant responses on the pre- and post- training surveys, by assigning a unique identification number, and storing all data collection files, including survey responses and interview responses, on a password-protected computer, accessible only by the QI project team.

Results

All DCWs ($n=9$) completed the competency training modules and sufficiently passed the Mealtime Skills Competency Checklists by return demonstration of skills learned from associated module(s). The results of the pre-training survey demonstrated that more than half the staff reported it was a challenge to assist residents with dementia during mealtimes, especially when they exhibited difficult feeding behavior (Table 1). Only one of nine DCWs had additional training on feeding assistance, but more than half of the staff members had heard of using

assistive hand-feeding techniques. However, only one staff member reported using assistive hand-feeding techniques when assisting residents with dementia during mealtime.

During baseline interviews, when asked “*if a resident pushes you away during mealtime, what would you do?*”, four (44%) of the participants reported that they would “walk away” and/or “try again later” (Table 2). One DCW stated, “That’s probably a sign they’re full and don’t want any more food. Since they have cognitive impairment, they cannot communicate their full and don’t want any more. Stop and offer liquid desert or alternatives, if not then you have to stop”. When asked, “*If a resident turned his/her head away, what would you do?*”, three (33%) DCWs responded that they would “try alternative foods/sweets”; three (33%) DCWs reported they would “walk away and come back”; and one participant responded, “Let the nurse know that they’re refusing to eat, tell them the signs I see”.

Post-implementation, all of the participants responded to the post-training survey (Table 3). Nine ($n=100\%$) of the participants indicated that the training program was “*Very Helpful*”; and 100% ($n=9$) of participants selected “*Very Well*”, when asked “*How well did the skills and techniques you used, help to better manage challenging feeding behaviors?*”.

In a final interview with participants, when asked, “*What are some of the things you remember from the feeding assistance training?*”, five (56%) DCWs said they remembered the “*techniques*” to use while assisting a resident during mealtimes (Table 4). Six (67%) DCWs said that they are using the new skills and knowledge to help residents during mealtime and that the use of the new knowledge and skills has helped managed challenging feeding behaviors previously experienced. Two of the three participants who reported not using the new skills reported that their role had changed during the pandemic, and they were not assisting residents during mealtimes during this project; and one of the participants reported that they had not had

an opportunity to assist a resident with cognitive impairment that required assistive hand-feeding. However, each of these three participants reported that they encouraged and made suggestions to their colleagues to ensure utilization of skills during mealtimes. Nine (100%) of the participants reported that the training program had a positive impact on residents' mealtime experience or their nutritional state. One participant said, "I have a patient who now eats more and gained weight. I used the underhand technique and it helped a lot.", another participant stated, "I noticed that feeding them with the new lessons they are eating better and more now."

Unintended consequences that posed implementation barriers were associated with the COVID-19 pandemic and the mandate that prohibited non-essential personnel to enter this facility. This led to creating an online training platform and utilizing technology to communicate with participants and complete the QI project.

Discussion

There appeared to be an association between implementation of the competency training modules and the final self-reported perceptions of the DCWs. Based on the pre-training survey and baseline interview data, there was a lack of professional training and education on mealtime assistance for direct care workers caring for residents with dementia at this facility.

These results were similar to the findings by Liu et al. (2018), who identified one of the greatest barriers to optimizing eating performance among adults with cognitive impairment was related to the limited professional training on mealtime care for residents with dementia.

The implementation of competency training and education modules improved staff's knowledge and skills of the evidence-based feeding assistance techniques all of the DCWs reaching a proficient score of 100% on the competency checklist. These findings were similar to the findings by Mueller et al. (2015), who implemented a web-based dementia feeding skills

training program for nursing home staff members to examine the impact of staff training on staff's proficiency of mealtime skills. They found that the web-based training program improved staff's self-report of self-efficacy of skills, and improved feeding skills scores, measured a "Feeding Skills Checklist".

A second finding of this QI project was the positive impact of staff's report of utilizing assistive hand-feeding techniques with an increased resident meal intake. This was similar to the findings by Mueller et al. (2015) who found that the use of a web-based training program significantly increased residents' percentage of meal intake two weeks after training and remained consistently stable thereafter. This was also similar to the findings by Batchelor-Murphy et al. (2017) who compared the efficacy of three handfeeding techniques, Direct Hand (DH), Under Hand (UH), and Over Hand (OH) on the percentage of meal intake by residents with dementia and found the techniques significantly increased the percentage of meal intake by residents with dementia.

Another finding of this QI project was the staff's report of utilization of the assistive hand-feeding techniques positively influencing residents' mealtime experience. This finding was similar to the findings by Mueller et al. (2015) who found that the use of a web-based training program improved residents' mealtime behaviors eight weeks post-training. Similarly, results from the study by Batchelor-Murphy et al. (2017) found that the use of one of the three handfeeding techniques, UH, DH, or OV significantly improved residents' mealtime behaviors, thus mealtime experience.

Limitations of the QI project included the inability of the project leaders to deliver the training on-site. Additionally, DCWs' self-report of utilization of hand-feeding techniques and improved resident meal take was a limitation, as project leaders were unable to objectively

measure DCWs' behavior. Due to the COVID-19 pandemic and mandated facility quarantine, project leaders were unable to enter the facility, thus project design was modified to a virtual design. Implementation of the project had to be altered in accordance with the everchanging pandemic procedures within the facility. During implementation three participants had to quarantine; thus, they were unable to participate in project initiatives for a length of time, interrupting anticipated project timelines.

Conclusion

DCWs who reported having limited or no additional assistive feeding education or training beyond their initial nursing educational program, stated that the competency training modules provided them with new knowledge and skills to utilize while assisting residents with dementia. Prior to implementation, many of the DCWs expressed encountering challenging feeding behaviors, which were often managed by walking away, trying again later, continuing to assist residents or stopping the mealtime experience all together. Each of these responses likely had a negative impact on the residents' mealtime experience and nutritional status. However, with competency training in feeding techniques, DCWs have the potential to play a major role in improving nutritional intake and the mealtime experience for residents with dementia.

Sustainability of this project was achieved by the train-the-trainer strategy. Many staff members have encouraged others to utilize skills learned from the modules during mealtimes, thus holding each other accountable for sustainability in practice change. Implications for practice include the need to expand DCWs' training on assistive half-feeding techniques to better provide mealtime assistance to residents with dementia. This includes training and education of staff during their onboarding orientation and retraining and reeducating staff annually with annual competencies. Future quality improvement projects would benefit from having on-site

training as well as having project leaders on-site to objectively measure DCWs' feeding behaviors and utilization of hand-feeding techniques. Additionally, resident outcomes should be objectively measured by methods such as weighing residents' meal tray pre- and post-meal, and using a validated observational tool, such as the *Edinburgh Feeding Evaluation in Dementia (EdFED)*, to assess residents' mealtime behaviors.

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Table 1*Pre-Training Survey (n=9)*

	Yes	No
Have you had any additional formal training/education feeding assistance (not including nursing or nursing assistant school)?	1 (11.1%)	8 (88.9%)
Do you currently use any special assistive-feeding techniques, such as Over Hand, when feeding residents cognitive impairment?	1 (11.1%)	8 (88.9%)
Have you heard of the Under Hand technique for assisting with feeding residents with cognitive impairment?	4 (44.4%)	5 (55.6%)

Table 2.
Baseline Interview

Question	Common Themes	
“When I say the term <i>feeding difficulty</i> , what does this mean to you?”	“[Resident] not opening [their] mouth”	“[Residents’] inability to communicate and/or comprehend it’s mealtime”
“What is/are the greatest mealtime challenge(s) you experience when assisting a resident with cognitive impairment, with a meal?”	“[Residents] don’t want to eat”	“[Resident] won’t open their mouth”
“If a resident pushes you away during a mealtime, what would you do?”	“Keep trying”	“Walk away or try again later”
“If a resident turned his/her head away, what would you do?”	“Try alternative foods – sweets”	“Walk away and come back”
“Do you feel that additional mealtime assistance training, focused on residents with dementia, would be beneficial to you as a caregiver?”	Yes	No

Table 3*Post Training Survey (n=9)*

Question	Very Well	Somewhat Well	Not Well at All
How well did the skills and techniques you used, help to better manage challenging feeding behaviors?	9 (100%)	0%	0%
	Very Helpful	Somewhat Helpful	Not Helpful at All
How helpful did you find the <i>Hand-feeding Nursing Facility Residents with Dementia</i> program?	9 (100%)	0 (0%)	0%
	Yes	No	
Have you had the opportunity to use any of the skills or techniques from the training while helping to feed any residents with cognitive impairment?	8 (89%)	1 (11%)	

Table 4.
Final Interview

Question	Yes	No
How have you been able to use this information to help your residents with dementia?	6 (67%)	3 (33%)
Did the training help you manage the challenging feeding behavior(s) you previously experienced?	6 (67%)	3 (33%)
Do you feel as though the training was beneficial to you?	8 (89%)	1 (11%)
Do you feel the training was beneficial to residents and their mealtime experience or their nutritional status?	9 (100%)	0 (0%)

Appendix A

Evidence Review Table

Citation: Batchelor-Murphy, M., McConnell, E., Amella, E., Anderson, R., Bales, C., Silva, S., Barnes, A., Beck, C., Colon-Emeric, C. (2017). Experimental comparison of efficacy for three handfeeding techniques in dementia. <i>The American Geriatrics Society</i> (65)4. https://doi.org/10.1111/jgs.14728						**Level II *Quality: B
Purpose	Design	Sample	Intervention	Outcomes	Results	
The purpose of this study was, “to compare efficacy of three handfeeding techniques for assisting NH residents with dementia with meals: Direct Hand (DH), Over Hand (OH), and Under Hand (UH)”.	Prospective pilot study, using Latin Square experimental design, “with randomization into one of three feeding technique sequences”.	Sampling Technique: Convenience sampling. Eligible: N=248. Eligibility Criteria: Residents were sixty or more years of age; had a length of stay of six weeks or longer; had a diagnosis of Alzheimer’s disease or dementia; scored twelve or less, or a score of ninety-nine on the Brief Interview for Mental Status questionnaire; required any	Intervention Protocol: Group 1 (n=10) intervention sequence: Direct Hand, Over Hand, Under Hand. Group 2 (n=10) intervention sequence: Over Hand, Under Hand, Direct Hand. Group 3 (n=10) intervention sequence: Under Hand, Direct Hand, Over Hand. Intervention fidelity: Each group received one of	Dependent Variable(s): DV1: Time (minutes) spent providing feeding assistance. DV2: Percentage of meal intake. DV3: Resident feeding behaviors. Measurement tool (reliability), time, procedure: DV1: Time spent providing feeding assistance was measured with the use of a stop-watched by the video-rater research	Statistical Procedures(s): A coefficient regression model was used to compare the effects of (1) assistive hand feeding technique, (2) type of meal, and (3) day one versus day two, on each of the main dependent variables. -A t-test was completed to determine the statistical significance of the effects of assistive hand-feeding technique and/or type of meal ($P \leq 0.05$). -A Cohen <i>d</i> effect size was calculated for each of the dependent outcome scores to determine the magnitude of effect between handfeeding techniques. Results:	

		<p>amount of feeding assistance; and had a legal representative to provide informed consent to participate. Excluded=195. Exclusion Criteria: Residents with a diagnosis of HIV infection, Parkinson’s disease, TBI, swallowing disorder; receiving nutrition parenterally and/or via feeding tube; deafness and/or blindness. # Accepted=53. Enrolled: <i>N</i>=30. Twenty-three (45%) of the fifty-three enrolled residents were not included in data</p>	<p>the three assistive handfeeding techniques for a total of consecutive six meals (two days). After the six meals using the first assistive feeding technique, the resident would receive the next assistive feeding technique in the sequence. This would be repeated for the third assistive feeding technique as well, until all three assistive feeding techniques were completed, a total of eighteen meals. Each meal and assistive feeding technique was video recorded.</p>	<p>assistant. Time began when the resident or the research assistant picked up the first utensil or food item. Time stopped when the resident demonstrated refusal to continue eating or when the entire meal was consumed. DV2: Meal intake was measured by (1) the estimated percentage of overall meal intake, estimated by the real time research assistant assisting the resident; and (2) weights of the food tray plus all assistive feeding objects before and after meals. It was not reported what</p>	<p>-There was no statistically significant effect between assistive feeding techniques and the time spent providing feeding assistance. -There was a statically significant difference between the type of meal and the time spent providing feeding assistance (<i>P</i>=0.014). -Assistive handfeeding technique had a significant effect on increased percentage of meal intake (<i>P</i>=0.023). -Both direct hand and under hand assistive feeding techniques, had a significantly greater impact on increased meal intake, compared to over hand technique (<i>p</i><.001). -Handfeeding technique had a statically significant effect on improved mealtime behaviors (<i>p</i>=.025). -Under hand technique showed significantly greater improvement in mealtime behaviors</p>
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		<p>collection due to death during study, change in condition, withdrawal from study, or resolution of self-feeding ability.</p> <p>Intervention: N=30. All thirty residents were randomly assigned to one of three intervention groups.</p> <p>Power analysis: No power analysis reported, increasing the risk of making a Type II error.</p> <p>Group Homogeneity: Nearly all of the participants were female (n=27, 90%); more than three-quarters of residents were Caucasian (n=26, 87%), four</p>	<p>Research assistants were educated at or above the certified nursing assistant level. The research assistants worked in pairs to serve as either the real-time research assistant, whom fed the resident using the handfeeding techniques, used an evidence-based protocol for managing mealtime difficulties, and used mealtime behavior coding during the meal; or as the video-rater, who videotaped the meal and coded the video recording post-meal. Research assistants were</p>	<p>type of scale was used or details regarding calibration.</p> <p>DV3: Resident’s feeding behaviors were measured using the Edinburgh Feeding Evaluation in Dementia (EdFED). The seven behaviors were observed for during meal times, and to reduce research assistant bias, increase interrater reliability, and standardize scoring of the level of assistance required for feeding, research assistants were instructed to rate the items more objectively, “0=never;</p>	<p>compared to direct hand and over hand assistive feeding techniques.</p>
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		<p>participants were African American ($n=4$).</p>	<p>cross-trained and alternated roles in a one-to-one alternating pattern. At a later time, a third research assistant coded all recoded videos again to assess inter-rater reliability of video coding. All research assistants took field notes to note any meals that were unable to be completed using the assigned assistive feeding technique and why.</p>	<p>1=behavior observed once; 2=behavior observed more than once". It was reported that the EdFED measurement tool of resident's behavior had a statistical inter-rater reliability of 0.43-0.59.</p>		
<p>Citation: Mueller, M., Batchelor-Murphy, M., Amella, E., Zapka, J., Beck, C. (2015). Feasibility of a web-based dementia feeding skills training program for nursing home staff. <i>Geriatric Nursing</i> (36). https://doi.org/10.1016/j.gerinurse.2015.02.003</p>						<p>**Level II *Quality: B</p>
<p>Purpose/ Hypothesis</p>	<p>Design</p>	<p>Sample</p>	<p>Intervention</p>	<p>Outcomes</p>	<p>Results</p>	

<p>The hypothesis of this study is that “training staff to use current clinical practice guideline improves meal intake” in residents with dementia.</p>	<p>Feasibility study, double blinded, randomization into intervention or control group.</p>	<p>Sampling Techniques: Convenience sampling from two nursing homes (NH) with similar number of beds, rates of residential weight loss, and for profit corporate status Eligible residents=32. Eligible nursing home staff=50. Eligibility Criteria: Residents were aged sixty-five or older, had a legal representative to sign informed consent to participate in the study, resided in the respective nursing home for at least six weeks prior to this study, had a medical diagnosis of dementia, required feeding assistance</p>	<p>Intervention Protocol: Web-based training module. Control Protocol: Routine care provided during mealtime. Intervention Fidelity: The intervention group was provided a web-based training module regarding common mealtime difficulties that residents with dementia commonly face and evidence-based information as to how staff can solve these difficulties. The training program consisted of a thirty minute voice-over PowerPoint and a four minute video demonstration of specific problem solving skills.</p>	<p>Dependent Variable(s): DV1: Staff knowledge of feeding skill. DV2: Staff’s self-efficacy of feeding skills. DV3: Staff’s performance of feeding skills. DV4: Time spent providing feeding assistance to residents. DV5: Resident’s behavior(s) during mealtime. DV6: Resident’s meal intake. Measurement tool (reliability), time, procedure: All outcome measures were measured for two consecutive lunchtime meals at baseline, and again at two- and eight-weeks post-training.</p>	<p>Statistical Procedures(s): A pooled <i>t</i>-test was completed to compare staff outcomes of self-efficacy and knowledge scores at baseline and at the eight week post-intervention time point within and between the two nursing homes. Mean scores of the Feeding Skills Behavior Checklist, EdFED scores, time spent providing feeding assistance, and meal intake scores were statistically analyzed and reported. Results: -Staff’s knowledge scores in the intervention group significantly increased from baseline to the eight week post-intervention point ($p=.001$).</p>
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		<p>at any level, were dependent on others to complete ADLs, and had a Mini Mental State Examination of nineteen or lower. Nursing home staff were eligible to participate in the study if they worked the seven in the morning to three in the afternoon shift, and were employed by the respective nursing home for at least thirty days prior to this study.</p> <p>Excluded residents=12 Excluded nursing home staff=15. Exclusion Criteria: Residents were excluded if they did not have a diagnosis of dementia ($n=3$), or if they had a diagnosis of HIV</p>	<p>Information was relayed on the three handfeeding techniques during this training module, but no specific information was provided to staff about when each technique should or could be used. Post-web training, during week three and five lunch meals, staff were offered to participate in in-person coaching to practice handfeeding techniques with guidance and to resolve any questions or concerns. Six trained research assistants, three at each study site were blinded to outcomes, and observed mealtime data for two consecutive</p>	<p>Staff knowledge was measured by the “NH Staff Knowledge of Feeding Assistance” questionnaire, completed by staff themselves. Staff self-efficacy was measured using a Likert scale questionnaire, completed by staff themselves. Staff behavior of feeding skills was measured through observation and the “Feeding Skills Checklist”, completed by research assistants observations. No validity or reliability of staff outcome measurement tools were reported. “The Food Intake Record” was used by research</p>	<p>-Self-efficacy scores in the control group significantly improved at the eight week post-intervention point ($p=.02$), whereas the intervention group’s self-efficacy scores eight weeks post-intervention did not significantly increase ($p=.86$).</p> <p>-Staff’s feeding skill scores of the intervention group improved from baseline to the eight week post-training mark by just under four points. However, the mean scores of feeding skills of the control group improved from baseline to the eight week post-training point by five points.</p> <p>-Mean resident EdFED scores from the intervention group improved over one-and-a-half points from</p>
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		<p>infection, Parkinson’s disease, amyotrophic lateral sclerosis, cancer, a swallowing disorder requiring SLP assistance (<i>n</i>=7), had a MMSE score greater than nineteen (<i>n</i>=1), did not require feeding assistance (<i>n</i>=7) or had a feeding tube present (<i>n</i>=7) or selected to receive placement of a feeding tube on an advanced directive. Nursing home staff were excluded if they did not comprehend the written English language. Accepted residents <i>N</i>=7. Accepted NH staff <i>N</i>=7. Intervention: NH=1. Staff=4.</p>	<p>lunchtime meals at baseline, and two weeks post-training, and again eight weeks post-training.</p>	<p>assistance to observe and measure all resident outcomes and included resident feeding behavior, measured by the “Edinburgh Feeding Evaluation in Dementia (EdFED) score”; the amount of time spent providing feeding assistance, measured by the use of stop-watches; meal intake, measured by pre-meal food tray weight and the difference of meal tray weight post-meal. No reliability or validity was reported for “The Food Intake Record”. Although it was mentioned that the EdFED has established</p>	<p>baseline to the eight week post-training point. The mean resident EdFED scores of the control group improved just below two points from baseline to the eight week post-training point. -The mean percentage of meal intake by the intervention group of residents at baseline improved by over eleven percent at the two week post-training point and remained stable when measured at the eight week time point. However, the mean percentage of meal intake by residents in the control group at baseline was just below thirty-percent, and declined over sixteen percent at the two week time point, and remained low when measured again</p>
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		Residents=4. Control: NH=1. Staff=3. Residents=3. Power Analysis: No power analysis was reported, increasing the risk of a Type II error. Group Homogeneity: Nursing home staff group homogeneity was presented in Table 3., which represented descriptive statistics of baseline characteristics.		reliability and validity, but no statistical reliability or validity data was reported. Inter-rater reliability was reported to be “established above 0.80 among research assistants”.	at the eight week point.
Citation: Liu, W., Galik, E., Boltz, M., Nahm, E., Resnick, B. (2015). Optimizing eating performance for older adults with dementia living in long-term care: a systematic review. <i>Worldviews on Evidenced-Based Nursing</i> (12)4. https://doi.org/10.1111/wvn.12100					**Level: I *Quality: A
Purpose/ Hypothesis	Design	Sample	Intervention	Outcomes	Results
The purpose of this review is “to evaluate the effectiveness of interventions on eating performance for older adults with dementia in	Systematic review of interventional studies.	Search Strategy: A search of five databases and “Google Scholar”, to identify peer reviewed journals and interventional	Intervention: Interventions varied across the studies included in the systematic review included intrapersonal or interpersonal training	Dependent Variable(s): Residents self-feeding abilities or eating performance. Measurement tool (reliability),	Outcome Data Retrieval: Researchers abstracted data from all included articles. Findings: -Two RCTs and two CCTs found that with

<p>long-term care (LTC)".</p>		<p>studies published in the English language, between years 1980 and 2014. Key words used in the literature search included "dementia", "Alzheimer", "feed(ing)", "eat(ing)", "mealtime(s)", "oral intake", "autonomy", "intervention". Based on eligibility, two reviewers selected and assessed studies based upon title and abstract, the availability of full-text, and reviewed, abstracted, and assessed the quality of the data. Results were compared and discrepancies were considered to</p>	<p>programs for nursing assistants or residents (including Montessori activities alone or with spaced retrieval activities), environmental modification(s) at the environmental level, mealtime assistance from nursing staff at the interpersonal level, and multicomponent interventions at the personal and environmental levels. Control: Controls varied across studies (routine care, education only, feeding skill training program). Intervention Protocol: Not applicable to the systematic review.</p>	<p>time, procedure: Self-feeding abilities were measured using the Feeding Ability Assessment. Functional feeding was measured by Feeding Traceline Technique. Eating independence was measured by Eating Behavior Scale (EBS), Functional Independence Measure (FIM), and Adapted Level of Eating Independence Scale. Feeding difficulties were measured using the Edinburgh Evaluation in Dementia scale. Mealtime communication was measure by Communication</p>	<p>implementation of a nursing assistant feeding skills training program residents' feeding difficulty scores significantly increased and mealtime performance of residents decreased. However, these studies found resident training through Montessori activities significantly reduced residential feeding difficulties, improved residents' eating performance, and increased residents' independent self-feeding frequencies. Additionally, when Montessori activities were combined with spaced retrieval, feeding difficulties were further reduced. -Two RCTs and one interrupted time series study found that verbal cues and positive</p>
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		<p>come to an agreement. The quality of the eligible studies were independently assessed using a standardized tool and the level of evidence toward treatment benefit was assessed and assigned for eligible studies.</p> <p>Eligibility Criteria: Interventional studies that focused interventions on optimizing eating performances and evaluated outcomes related to self-feeding or eating performance changes in adults sixty-five years of age or older with a diagnosis of dementia and</p>		<p>Outcome Measure of Function Independence.</p>	<p>reinforcement resulted in significant improvement in resident’s ability to independently eat solid and liquid food. Individualized feeding assistance, increased the amount of time spent providing feeding assistance by nearly seven-fold. The intervention also resulted in a nearly doubled increased rate of verbal and physical promoting by staff during meals.</p> <p>-One RCT, one single group repeated measures, and one interrupted time series study found that multicomponent interventions of family style dining services with staff training on verbal and behavioral prompting, and positive reinforcement through praise of</p>
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		<p>living in a LTC facility. Exclusion Criteria: Studies with participants receiving enteral or parenteral nutrition; involving participants that were recruited from hospitals, communities, in-home or clinic settings; interventions that included nutritional supplementation, nutritional education or music; or outcomes focused on nutritional intake, anthropometric and/or biochemical parameters, behavioral disturbances or other adverse events. Included: <i>N</i>=11.</p>			<p>appropriate mealtime behavior, significantly improved resident's eating participation and appropriate communication with staff. However, staff education was found to maintain eating performance.</p>
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		<p>Five RCTs, two CCTs, two interrupted time series, two single group repeated measures, all originating from the U.S., Canada, and Taiwan. A total of five-hundred-and-thirty adults aged sixty-five or older with dementia; eighty-six nursing staff members; twenty-one LTC facilities. PRISMA diagram was used to guide decisions and follow criteria to guide the systematic review. Power Analysis: Not applicable to systematic review.</p>			
<p>Citation: Liu, W., Tripp-Reimer, T., Williams, K., Shaw, C. (2018). Facilitators and barriers to optimizing eating performance among cognitively impaired older adults: a qualitative study of nursing assistants’ perspectives. <i>Dementia (0)</i>0. doi: 10.1177/1471301218815053</p>					
<p>**Level: VI *Quality: C</p>					
Purpose	Design	Sample	Intervention	Outcomes	Results
The purpose of this study was to “explore NAs’	Qualitative descriptive study.	Sampling Technique: Face-to-face, purposive	Intervention Protocol:	Dependent Variable(s):	Results: Barriers at the resident level: high variability of eating performance with

<p>perceptions of the multilevel facilitators and barriers in optimizing eating performance in residents with CI using the SEM as a framework.”.</p>		<p>sampling of nursing assistants (NAs) from two nursing homes and one inpatient geriatric-psychiatry unit. Eligible NAs: 39 Eligibility Criteria: NAs eligible if they provide daily mealtime care to residents with cognitive impairment, worked a shift with a meal (day and/or evening shift), and able to speak and comprehend the English language. Exclusion Criteria: met all inclusion criteria, and signed written consent to participate in the study. #Accepted/Enrolled: 23</p>	<p>Six focus groups with groups of NAs. Intervention fidelity: Groups of three to five participants participated in six focus groups, conducted by trained female researchers using a standardized interview guide at the site in which the participants worked. Focus groups lasted forty-five to fifty-five minutes. Interview questions focused on barriers and facilitators at the resident, caregiver, environmental (facility), and policy factors during mealtimes. All focus groups were audio-recorded.</p>	<p>1. Barriers and facilitators at the resident, policy, caregiver, and environmental levels. Measurement tool (reliability), time, procedure: 1. Focus groups were recorded. Recordings were transcribed verbatim and coded using the NVIVO 9. Responses transcribed, were reviewed line-by-line and significant statements were extracted and codes were assigned. Codes were grouped into facilitator and barrier at the resident, caregiver, policy, and environmental levels. Coding was determined to have accurate and acceptable</p>	<p>and across residents, was the most frequently discussed barrier across focus groups. Barriers at the caregiver level: the most frequent barrier identified across focus groups was caregivers’ frustration and challenges related to time constrains, lack of preparation and limited professional training on dementia mealtime care. Barriers at the environmental level: the greatest barrier identified was the physical dining room environment. Barriers at the policy level: the barrier identified at the policy level is lack of policy for staff to sit and eat with residents. Facilitators at the resident level: Facilitators at the caregiver level: the most common facilitator across groups are the NAs knowing the resident and having an emotional connection. Facilitators at the environmental level: the number one facilitator amongst groups was the physical environment. Facilitators at the policy level: No facilitators at the policy level identified.</p>
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				reliability, established through intercoder reliability.	
Citation: Lerner, N., Resnick, B., Galik, E., Russ, G. (2010). Advanced nursing assistant education program. <i>The Journal of Continuing Education in Nursing</i> (41)8. doi:10.3928/00220124-20100401-10					**Level: IV *Quality: C
Purpose	Design	Sample	Intervention	Outcomes	Results
The purpose of the study was to “explore attendance and interest rates; determine the effectiveness of a full-day advanced education program for nursing assistants, based on evidence of increased knowledge; and determine the participants’ ability to apply new knowledge to real-world clinical settings”.	Single-group, pre- and post-test	Sampling Technique: Convenience, advertising (via email) sampling. Eligible: N=800 facilities in Maryland, Pennsylvania, and Delaware. Eligibility Criteria: Nursing assistants working in nursing homes in the states of Maryland, Pennsylvania, and Delaware, with at least two years of experience and selected by their facility’s administrative staff.	Intervention Protocol: One daylong training program. Intervention fidelity: Nursing assistants participated in a one daylong training program that consisted for six learning modules, presented by three nurse faculty members. Training modules included recognizing acute medical problems in residents, managing challenging behaviors, dealing with difficult people,	Dependent Variable(s): 1. Nursing assistant knowledge. 2. Assessment of learning needs. Measurement tool (reliability), time, procedure: 1. Nursing assistant knowledge was measured through an Advanced Nursing Assistant Knowledge Test, pre- and post-training. The test was multiple-choice, paper-pencil test, with two question from each of the six modules, 12 questions in total. The test had acceptable face validity determined by expert evaluation, and the Knowledge Test had acceptable validity and reliability testing using a Rasch analysis.	Statistical Procedures(s): Descriptive data was analyzed using a Statistical Package for the Social Sciences (SPSS) software. The Advanced Nursing Assistant Knowledge Test results were analyzed and statistical tests were computed to determine the mean, SD, range, and upper and lower limits. A histogram was created to visually show distribution of results, and a dependent <i>t</i> -test was completed to compare means of pre- and post-test results, ($\alpha=0.05$). Descriptive data was analyzed to determine results of the Analysis of Learning Needs. A gap analysis was completed at the end of the training program to determine future potential course offerings. Results:

		<p>Exclusion Criteria: Nursing assistants working in other states, nursing assistants working in facilities other than nursing homes.</p> <p>#Accepted Enrolled: 50 nursing assistants.</p>	<p>restorative care philosophy, infection control updates, and leadership. Teaching methods varied between lectures, case studies and learner participation. Participation was paid for by their respective facility.</p>	<p>2. Assessment of learning needs was measured through Analysis of Learning Needs. Participants rated their subjective opinion of importance of twenty-five topics related to a nursing assistant’s practice in caring for elderly adults in the LTC setting, and their interest in learning more about each topic. Importance rating was on a scale of 1-4, 1 being not important and 4 being very important. Interest was rated on a scale from 4-1, 4 being no interest, 1 being very interested.</p>	<p>The mean Advanced Nursing Assistant Knowledge Test scores significantly improved pre- and post-test by over fifteen percent ($p \leq 0.001$). The mean pre-test score was 6.08 ($SD=1.8$; 50%), out of a total possible score of 12.00 (100%). The mean Advanced Nursing Assistant Knowledge Test post-test scores was 8.18 ($SD=2.07$; 68.2%).</p>
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Notes: *Melnyk, B. M., & Fineout-Overholt, E. (2019). Evidence-based practice in nursing & healthcare: A guide to best practice. Philadelphia: Wolters Kluwer.

**Newhouse, R. (2006). Examining the source for evidence based nursing practice. Journal of Nursing Administration, 36(7/8), 337-340.

Appendix B**Pre-Training Survey**

By completing this training survey and module training, you are giving informed consent that your data will be deidentified and used as part of this QI project.

1. Have you had any additional training/education on feeding assistance?

Yes

No

2. Do you currently use any special assistive-feeding techniques, such as Over Hand, when feeding residents with cognitive impairment?

Yes

No

3. Have you heard of using an Under Hand technique for assisting with feeding residents with cognitive impairment?

Yes

No

4. When helping to feed a resident with cognitive impairment, how challenging is it when the resident closes their mouth or turns their head away?

Very Challenging

Somewhat Challenging

Not Challenging at all

Appendix C

Baseline Interview

Participant: _____ Date:

Feeding Behaviors (Adaptive Challenges)

1. When I say the term “feeding difficulty” – what does this term mean to you?
2. What is/are the greatest mealtime challenge(s) you experience when assisting a resident with a meal?

Typical Interventions (Technical/ Adaptive Work)

3. If a resident pushes you away during a mealtime, what would you do?
4. If a resident turned his/her head away, what would you do?
5. Do you feel that additional mealtime assistance training, focused on residents with dementia, would be beneficial to you as a caregiver?

Appendix D

Mealtime Skills Competency Checklist

Participant # _____ Completion of Module 1 (y/n) Date/Week# _____

Skill Check 1: Approach to Care (shake hands approach)

Skill Assessed	Satisfactory (✓) or Unsatisfactory (0)
Approaches the resident off-center	
Greets the resident by name	
Waves with hand near face	
Uses underhand shake technique properly	
Kneels at the resident's side	
Adjusts to the dominant hand if necessary	

Participant # _____ Completion of Module 2 (y/n) Date/Week# _____

Skill Check 2: Over Hand technique

(Date/Week# _____)

Skill Assessed	Satisfactory (✓) or Unsatisfactory (0)
Correctly identifies technique when used	
Works with dominant side of resident	

Other hand on resident’s shoulder, positioned properly	
Proper position of silverware (fork/spoon/cup)	
Resident hold utensil in their skill fingers	
Caregiver gently puts hand over the resident’s hand.	
Caregiver guides resident’s hand toward their mouth in middle of the resident’s body.	

Skill Check 2: Under Hand technique

(Date/Week# _____)

Skill Assessed	Satisfactory (✓) or Unsatisfactory (0)
Correctly identifies technique when used	
Works with dominant side of resident	
Other hand on resident’s shoulder, positioned properly	
Proper position of utensil (fork/spoon/cup)	
Underhand shake demonstrated	

Caregiver hold silverware with their skill fingers, and loads with other hand or resident is engaged in loading movement	
Caregiver guides resident’s hand toward their mouth in middle of the resident’s body	

Skill Check 2: Direct Hand technique

(Date/Week# _____)

Skill Assessed	Satisfactory (✓) or Unsatisfactory (0)
Correctly identifies technique when used	
Works with dominant side of resident	
Other hand on resident’s shoulder, positioned properly	
Proper position of silverware (fork/spoon/cup)	
Utensil is presented in resident’s visual field	
Caregiver holds utensil and loads	
Caregiver guides utensil toward the resident’s mouth in the middle of their body	

Appendix E
Post-Training Survey

How helpful did you find the *Handfeeding Techniques for Nursing Facility Residents* program?

Very Helpful

Somewhat Helpful

Not Helpful at All

Have you had the opportunity to use any of the skills or techniques from the training while helping to feed any residents with cognitive impairment?

Yes

No

How well did the skills and techniques you used, help to better manage challenging feeding behaviors?

Very Well

Somewhat Well

Not Well at All

What changes or additional content would you like to see within the training modules?
(or are there any other challenges you've experience when trying to assist a resident with dementia that wasn't covered in the feeding assistance training?)

Appendix F

Final Interview

1. What are some of the things you remember from the feeding assistance training?
2. How have you been able to use this information to help your residents with dementia?
3. Do you have a story of a particular resident you helped after training that went better than before training?
 - a. If yes, ask them to tell you about it:
 - What behavior was most challenging?
 - What did you do about it?
 - Did using a particular handfeeding technique help?
 - Did the resident eat more food as a result?
 - Anything else you think went better after your training than before with this resident?
 - b. If no, go to the next question.
4. Did the training help you manage the challenging feeding behavior(s) you previously experienced?
5. How can this training be helpful in the future when providing feeding assistance to a resident?
6. Do you feel as though the training was beneficial to you? How?
7. Do you feel the training was beneficial to residents and their mealtime experience or their nutritional status?