Supportive handfeeding in dementia: Establishing evidence for three handfeeding techniques

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Collaborators

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- Susan Silva, PhD
- Angel Barnes, RN, BSN
- Cornelia Beck, RN, PhD, FAAN
- Cathleen S. Colon-Emeric, MD, MHS, FACP
Significance

- By 2025, the number of persons with dementia (PWD) is expected to double – in 2014, 1 in 9 older Americans have dementia.

- Estimated 2/3 of PWD that live in the nursing home (NH) setting will die there.

- Eating problems occur in at least 80%; feeding tubes are often placed as the “treatment”.
Hand Feed vs. Tube Feed

- In 2012, Costs $1.64 billion
- By 2018, Costs $2.4 billion
- Medicare costs are already expected to reach $830 billion a year by 2017. About one-quarter -- or $208 billion -- will be spent on people in the final year of their lives
Biggest Problems

• Hand feeding is recommended over tube feeding, yet no evidence for any particular technique

• Meal intake may be complicated by dementia-related mealtime behaviors – in literature, currently referred to as “aversive feeding behaviors”
  – Currently, there is a lack of training to deal with either issue for our direct care and licensed nursing workforce
Study Purpose

Experimental repeated-measures, within-subjects pilot study to compare three hand feeding techniques for assisting persons with dementia in the nursing home setting.

- Direct Hand (DH)
- Over Hand (OH)
- Under Hand (UH) Feeding
### Study Design & Timetable

<table>
<thead>
<tr>
<th>Aim 1</th>
<th>Meal observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 1-2</td>
</tr>
<tr>
<td>(N = 30)</td>
<td>HAND FEEDING technique order randomly determined for NH Staff via Latin square</td>
</tr>
<tr>
<td></td>
<td>(Trained Research Feeding Assistants as feeding assistants)</td>
</tr>
<tr>
<td>PWD 1, 4…22</td>
<td>OH</td>
</tr>
<tr>
<td>PWD 2, 5…23</td>
<td>UH</td>
</tr>
<tr>
<td>PWD 3, 6…24</td>
<td>DH</td>
</tr>
</tbody>
</table>

**Key:** B = Baseline; D = Direct hand feeding; O = Hand-over-hand feeding; U = Hand-under-hand feeding
Subject Enrollment Criteria

- **Inclusion Criteria**
  - 60 years+
  - Resident of NH 6 weeks prior to data collection
  - BIMS (0-12)
  - PWD requires active feeding intervention
  - Diagnosis of dementia in medical record
  - If has GT, must be orally fed

- **Exclusion Criteria:**
  - Swallowing disorder
  - Visual or hearing impairment
  - No parenteral or IV feedings
  - No diagnosis of Parkinsons, TBI, or HIV/AIDS
Procedures

- Meal interactions video recorded to equal 18 meal interactions per PWD
- Goal of N = 30 will equal 540 hours of video recording at study conclusion
- RA working in pairs, usually on weekends for three weeks and complete “real time” coding
- RAs complete “video” coding on partner’s meals
Measures

• Time Spent Providing Feeding Assistance
  – Total time

• Meal Intake
  – Tray weights before, after, and tray weight itself
  – Percentage estimations of each food/ fluid item

• Edinburgh Feeding Evaluation in Dementia Scale (EdFED)
  – Normal score of 0-20
  – Added frequency scores for each behavior item

• Field Notes
  – Deviations and rationale
<table>
<thead>
<tr>
<th>Scoring Scale:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = Never</td>
</tr>
<tr>
<td>1 = Sometimes (occurs at least one time during the meal)</td>
</tr>
<tr>
<td>2 = Often (occurs more than one time during a meal)</td>
</tr>
</tbody>
</table>

**Score:**
1. Does the PWD require close supervision?
2. Does the PWD require physical help with feeding?
3. Does the PWD leave food on the plate at the end of the meal?
4. Is there spillage by the PWD while eating?
5. Does the PWD turn his head away while being fed?
6. Does the PWD refuse to eat?
7. Does the PWD refuse to open his mouth?
8. Does the PWD intentionally spit out his food?
9. Does the PWD leave his mouth open allowing food to drop out?
10. Does the PWD refuse to swallow?

**Total Score (range from 0 – 20)**
# Results

*Experimental comparison of hand feeding techniques*

- **Time (IRR: .91-.97)**

<table>
<thead>
<tr>
<th></th>
<th>Direct Hand</th>
<th>Over Hand</th>
<th>Under Hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time in Minutes (SD)</td>
<td>42.4 (9.2)</td>
<td>45.2 (9.2)</td>
<td>44.1 (9.3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time in Minutes (SD)</td>
<td>41.5 (9.1)</td>
<td>45.8 (9.1)</td>
<td>44.4 (9.2)</td>
</tr>
</tbody>
</table>
# Results

*Experimental comparison of hand feeding techniques*

- **Meal Intake**: (IRR: .88-.91)

<table>
<thead>
<tr>
<th></th>
<th>Direct Hand</th>
<th>Over Hand</th>
<th>Under Hand</th>
<th>Multiple comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tray Weights</strong></td>
<td>67.0% (15.2)</td>
<td>59.9% (15.1)</td>
<td>65.0% (15.0)</td>
<td>DH vs. OH: <em>p</em> &lt; .0001</td>
</tr>
<tr>
<td></td>
<td>*DH vs. OH: <em>p</em> &lt; .0001</td>
<td>DH vs. UH: <em>p</em> = 0.1937</td>
<td>*OH vs. UH: <em>p</em> = 0.0016</td>
<td></td>
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</table>

<table>
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<th>Dinner</th>
<th>Multiple comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tray Weights</strong></td>
<td>61.9% (15.2)</td>
<td>67.1% (15.2)</td>
<td>62.9% (15.3)</td>
<td>NS</td>
</tr>
</tbody>
</table>
Results

Experimental comparison of hand feeding techniques

- Feeding Behaviors: (IRR: .47-.59)

<table>
<thead>
<tr>
<th></th>
<th>Direct Hand Score (SD)</th>
<th>Over Hand Score (SD)</th>
<th>Under Hand Score (SD)</th>
<th>Multiple Comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>EdFED</td>
<td>8.0 (1.8)</td>
<td>8.3 (1.8)</td>
<td>7.7 (1.8)</td>
<td>*DH vs. OH: p = 0.0412</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DH vs. UH: p = 0.2390</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>*OH vs. UH: p = 0.0014</td>
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<table>
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<th>Breakfast Score (SD)</th>
<th>Lunch Score (SD)</th>
<th>Dinner Score (SD)</th>
<th>Multiple Comparisons</th>
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<tr>
<td>EdFED</td>
<td>7.7 (1.8)</td>
<td>8.0 (1.8)</td>
<td>8.2 (1.8)</td>
<td>NS</td>
</tr>
</tbody>
</table>
# Field Note Analysis: Deviations

<table>
<thead>
<tr>
<th>Measure</th>
<th>Meals Assigned</th>
<th>Meals Completed (%)</th>
<th>Resident able to self-feed part of the meal (%)</th>
<th>Deviations from designated technique (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Meals</strong></td>
<td>N = 540</td>
<td>532 (98.5%)</td>
<td>95 (17.9%)</td>
<td>89 (16.7%)</td>
</tr>
<tr>
<td>DH</td>
<td>180</td>
<td>173 (96.1%)</td>
<td>36 (20.8%)</td>
<td>5 (2.9%)</td>
</tr>
<tr>
<td>OH</td>
<td>180</td>
<td>181* (100.5%)</td>
<td>29 (16.0%)</td>
<td>49 (27.1%)</td>
</tr>
<tr>
<td>UH</td>
<td>180</td>
<td>178* (99.8%)</td>
<td>30 (16.8%)</td>
<td>35 (19.6%)</td>
</tr>
<tr>
<td><strong>Designated Technique</strong></td>
<td><strong>Total Deviations</strong></td>
<td><strong>Deviated from DH to (%)</strong></td>
<td><strong>Deviated from OH to (%)</strong></td>
<td><strong>Deviated from UH to (%)</strong></td>
</tr>
<tr>
<td>DH</td>
<td>5 (2.9%)</td>
<td></td>
<td>2 (40%)</td>
<td>3 (60%)</td>
</tr>
<tr>
<td>OH</td>
<td>49 (27.1%)</td>
<td>41 (82.0%)</td>
<td>-</td>
<td>8 (16%)</td>
</tr>
<tr>
<td>UH</td>
<td>35 (19.7%)</td>
<td>33 (94.3%)</td>
<td>2 (5.7%)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Meal Type</strong></td>
<td><strong>Total Deviations</strong></td>
<td><strong>Deviated from DH to (%)</strong></td>
<td><strong>Deviated from OH to (%)</strong></td>
<td><strong>Deviated from UH to (%)</strong></td>
</tr>
<tr>
<td>Breakfast</td>
<td>25 (14.0%)</td>
<td>OH 1 (2.5%)</td>
<td>DH 14 (35.0%)</td>
<td>DH 8 (20.0%)</td>
</tr>
<tr>
<td>Lunch</td>
<td>31 (17.3%)</td>
<td>OH 0 (0.0%)</td>
<td>UH 1 (2.5%)</td>
<td>OH 1 (2.5%)</td>
</tr>
<tr>
<td>Dinner</td>
<td>33 (18.4%)</td>
<td>OH 0 (0.0%)</td>
<td>UH 4 (12.9%)</td>
<td>OH 0 (0.0%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UH 3 (9.0%)</td>
<td>DH 14 (42.4%)</td>
<td>DH 12 (36.4%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>UH 3 (9.1%)</td>
<td>OH 1 (3.0%)</td>
</tr>
</tbody>
</table>
Discussion

- Handfeeding techniques
- Time spent providing feeding assistance
- Meal intake
- Feeding Behaviors
Conclusion

• UH technique is time neutral
• UH promotes as much meal intake as DH
• UH causes less feeding behaviors than OH
Next Steps

• Adaptive Leadership Framework
  – Technical outcomes
    • Time
    • Feeding Behaviors
    • Meal Intake
  – **Adaptive outcomes
    • Verbal and non-verbal cues by dyad
    • Functional ability of PWD
    • Responses to hand feeding techniques – how/when to use each one
Thank you!

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