Impact of Cooking and Home Food Preparation Interventions among Adults: Outcomes and Implications for Future Programs

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Learning Objectives

- Characterize cooking/home food preparation interventions - study design, audience, expected outcomes, exposure and evaluation measures.
- Identify study design issues that limit strength of conclusions.
- Recognize implications of findings for nutrition education practice and further research.
Lack of time to plan and prepare food at home

Fast food and food from away from home locations increasing

Time spent in home food preparation decreasing

Associations between confidence/skills/value and behavior

Confidence ability prepare healthy meals $\rightarrow \uparrow$ healthfulness

Skills $\rightarrow \downarrow$ readymeal consumption

High perceived value food preparation $\rightarrow \uparrow$ FV intake

Confidence prepare veg $\rightarrow \uparrow$ variety veg purchased
Cooking interventions promoted to improve health, popular & well-established

Extensive review of the literature - short and long-term impact for adults - not available

Information from a review can improve effectiveness of current programs & inform development of new programs

Purpose - review previous research on cooking/home food preparation interventions and diet and health-related outcomes among adults.
Search

January 1980 - December 2011

OVID MEDLINE, Agricola, Web of Science

English language
Adults (≥18 years)

Keywords in various combinations:

- intervention, demonstration, health promotion, education or class
- food preparation, home food preparation, cooking or cookery
- food habits, food intake, eating patterns, diet, dietary intake, dietary outcomes or skills
373 journal articles retrieved

- 54 (repeated in databases)

319

- 209 (not intervention studies)

110

- 97 (children, commentaries, review, cooking not primary aim)

13

+ 15 (from bibliographies of applicable studies)

28 journal articles included
<table>
<thead>
<tr>
<th>Intervention type</th>
<th>Study design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking assignments (n=2)</td>
<td>Intervention without control group (n=16)</td>
</tr>
<tr>
<td>Cooking classes/demonstrations (n=25)</td>
<td>Intervention with control group (non-randomized) (n=6)</td>
</tr>
<tr>
<td>Viewing a cooking TV show (n=1)</td>
<td>Intervention with control group (randomized) (n=6)</td>
</tr>
</tbody>
</table>

Extracted information into a standardized table, checked independently by a second author.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Design</th>
<th>Population</th>
<th>Intervention Duration</th>
<th>Measurement Tools and Measures</th>
<th>Dietary and/or Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown and Richards²²</td>
<td>Post-assessment of intervention without control group: “Cook-an-Entree” assignment</td>
<td>Students enrolled in a university nutrition course (n = 579), Brigham Young University, UT</td>
<td>1 assignment</td>
<td>Open-ended qualitative survey “What did you learn from this experience?” to assess perception of food prepared</td>
<td>Students perceived the entree they prepared to be nutritious (46%), easy to prepare (42%), and quick (28%). Most (98%) intended to prepare the entree again.</td>
</tr>
</tbody>
</table>
Validity questions on research design and implementation - quality criteria checklist

Positive - clearly addressed issues of inclusion/exclusion, bias, generalizability, data collection and analysis

Negative - these issues have not been adequately addressed

Neutral - neither exceptionally strong nor exceptionally weak

**Process**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>External reviewer used the checklist to generate responses to validity questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Authors generated responses to validity questions (2-6 studies each)</td>
</tr>
<tr>
<td>Step 3</td>
<td>One author compared responses from external reviewer and authors and generated an overall rating (Kappa 0.71)</td>
</tr>
</tbody>
</table>

¹Evidence Analysis process, Academy of Nutrition and Dietetics Evidence Analysis Library (EAL)
<table>
<thead>
<tr>
<th>Validity Questions</th>
<th></th>
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<tbody>
<tr>
<td>1. <strong>Was the research question clearly stated?</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 Was (were) the specific intervention(s) or procedure(s) [independent variable(s)] identified?</td>
<td>Yes or No</td>
</tr>
<tr>
<td>1.2 Was (were) the outcome(s) [dependent variable(s)] clearly indicated?</td>
<td>Yes or No</td>
</tr>
<tr>
<td>1.3 Were the target population and setting specified?</td>
<td>Yes or No</td>
</tr>
<tr>
<td>2. <strong>Was the selection of study subjects/patients free from bias?</strong></td>
<td></td>
</tr>
<tr>
<td>2.1 Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study?</td>
<td>Yes or No</td>
</tr>
<tr>
<td>2.2 Were criteria applied equally to all study groups?</td>
<td>Yes or No</td>
</tr>
<tr>
<td>2.3 Were health, demographics, and other characteristics of subjects described?</td>
<td>Yes or No</td>
</tr>
<tr>
<td>2.4 Were the subjects/patients a representative sample of the relevant population?</td>
<td>Yes or No</td>
</tr>
</tbody>
</table>
Control Group?

Not included
Post-assessment only - 4
Pre/post assessment - 12

Included
Randomized - 6
Non-randomized - 6

Number of sessions & Assessment Schedule?

Total number of sessions varied widely
(3, 4, 6, 8, 12–13, to 38)

Assessments beyond immediate post-intervention
(n=15) (ranging from 1-48 months post-intervention)
Majority – quantitative measurements
- Dietary intake
- Nutrition or cooking knowledge
- Attitudes and practices
- Health outcomes

Measurement tools
- Frequency of dietary behaviors
- Standard dietary intake data collection methods
- Qualitative interviews alone or with other measures
- Physical and laboratory measures

Previous testing of tools
- Little or no information about source or testing
- Some psychometric data provided
- Referenced previous research using tools
Table 2. Description of Evaluation Tools Used to Measure Quantitative Outcomes Regarding Dietary Intake, Cooking Behaviors, Knowledge, and Attitudes: Literature Sources and Pilot-Testing Information

<table>
<thead>
<tr>
<th>Construct</th>
<th>Tool</th>
<th>Original Source for Tools/Information about Pilot Testing</th>
<th>Psychometric Data (if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dietary behavior change</td>
<td>7-d food diary&lt;sup&gt;39&lt;/sup&gt;</td>
<td></td>
<td></td>
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<tr>
<td>Attitudes</td>
<td>8-item attitude questionnaire&lt;sup&gt;41&lt;/sup&gt;</td>
<td>Questionnaire&lt;sup&gt;41&lt;/sup&gt; developed by experts to reflect program objectives and test-retest reliability established</td>
<td>Test-retest correlations ranged from 0.77 to 0.93 for attitudes&lt;sup&gt;41&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
Process Evaluation

Measures used by some:
Not reported for some
Varied widely for those that included this evaluation

Most reported number recruited and number in final sample

What was reported by some:
Attendance or completion of activities & differences in outcomes according to attendance
Some explored opinions about programs & experiences
Several reported reasons for not completing
Program cost (n=2)
EAL Quality Results

- Positive: n=11
- Neutral: n=1
- Negative: n=13

Not specifying inclusion/exclusion criteria
Not describing how withdrawals were handled
Not using standard, valid and reliable data collection instruments
Not adequately describing statistical analysis
Interventions without a control group (n=16)
Beneficial changes in intake after the intervention - various nutrients, food groups, and specific foods (n=10)

Interventions including a control group (n=12)
Intervention participants’ dietary intakes improved to a greater degree than control (n=5)
Mixed results for the intervention group compared to the control group (n=2)
Knowledge/Skills/Attitudes/Practices

- Improved understanding of healthy food preparation & healthier cooking strategies (n=3)
- Positive effects on nutrition & fruit & vegetable knowledge (n=4)
- Increased cooking confidence (n=3)
- Positive results for cooking attitudes & enjoyment (n=2)
Health Outcomes

- Positive changes
  - Serum cholesterol

- Improved measures
  - Rheumatoid arthritis

- Improved parameters
  - Chronic kidney disease

- Improved quality of life
  - Prostate cancer

- No impact
  - BMI (n=4)
Interventions involving home food preparation and/or cooking may result in favorable dietary outcomes, food choices, and health-related outcomes among adults.

Results should be interpreted with caution:
- Weaknesses in study design
- Varying study populations
- Lack of rigorous assessment
**Implications**

Research to determine most effective methods of delivering and evaluating cooking interventions

1. Use stronger study designs (control groups/longer term follow up)
2. Minimize sampling biases
3. Use standard, valid and reliable data collection instruments
4. Adequately describe statistical analysis
5. Incorporate process evaluation measures

Consider barriers to effectiveness

Address family food norms and resistance to change

Implement cooking initiatives in conjunction with strategies to increase food accessibility and affordability
References

See reference list from:
