

## A systematic review and meta-analysis of the effects of adults' participation in home cooking interventions on their cooking skills, food habits, diet and health

### Citation

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### Review question [1 change]

- 1) What are the effects of adults' participation in home cooking interventions on their:
  - a) domestic cooking skills, knowledge, confidence, attitudes and behavior;
  - b) food habits, diet quality and dietary intake;
  - c) weight and health status, particularly in what these relate to the prevention of lifestyle-associated chronic illnesses?
- 2) To what extent are effects moderated by the design, frequency and duration of interventions, in particular of the components specifically intending to improve domestic cooking skills?
- 3) What is the quality of the scientific evidence regarding effects and moderators, particularly in what respects the definition, scope and measures of domestic cooking skills?

### Searches

Guidelines for searching studies (Chapter 6, Cochrane Handbook for Systematic Reviews of Interventions) and developing search strategies (McGowan, J., Sampson, M., Salzwedel, D. M., Cogo, E., Foerster, V., & Lefebvre, C. (2016), PRESS peer review of electronic search strategies: 2015 guideline statement. *Journal of Clinical Epidemiology*, 75, 40-46) were followed. EndNote was used to archive and manage citations, abstracts and publication files.

Review team expertise and a manual search in Google Scholar identified several reviews of interventions with a home cooking component, including two systematic reviews covering the period between 2011 and 2016. Literature search was thus initially restricted to review-type articles – peer-reviewed papers, grey literature and postgraduate thesis in English, or with English version -, published between 2000-18. The following electronic bibliographic databases were searched in April 2018: MEDLINE, CINAHL Plus, PsycArticles, Psychology and Behavioral Sciences Collection, ERIC, OpenDissertations (EBSCOhost), DARE/CENTRAL (Cochrane Library), Web of Science, EThOS (British Library-Doctoral Theses), OATD/NDLTD (Dissertations). Details of the search strategy are provided in the enclosed file.

The title and abstract of unique reviews retrieved were screened against the corresponding eligibility criteria; reviews meeting them were deemed included and retrieved for full screening. All unique citations of individual study reports (included and excluded) were manually searched, and their title and abstract screened against the corresponding eligibility criteria; publications meeting them were deemed included and retrieved for full screening.

Individual study reports published between 2015-18 were searched in July 2018 following a similar search process. Their title and abstract will be screened against the corresponding eligibility criteria; publications meeting them will be deemed included and retrieved for full screening. All citations of new individual study reports will be manually searched and screened according to the process described. Key authors will be contacted and asked to provide information about unpublished and on-going studies.

## Types of study to be included

Policy, programs, interventions, experiments and other initiatives intending primarily to promote home cooking among adults and entailing at least one component or treatment aiming to increase their domestic cooking/food preparation skills, as well as specific measures to assess this (e.g., self-reported cooking knowledge, self-efficacy/self-confidence in cooking meals from scratch, externally assessed ability to prepare fresh ingredients for cooking (McGowan, L., Caraher, M., Raats, et al. (2017). Domestic cooking and food skills: a review. *CRFSN*, 57(11), 2412-31).

Excluded are studies:

- Where the promotion of home cooking is a primary outcome but that do not entail a treatment or component aiming to increase domestic cooking/food preparation skills
- Where the promotion of home cooking or domestic cooking/food preparation skills among adults are secondary or unintended outcomes
- Studies without a pre- and post-test, quantitative assessment of adults' domestic cooking/food preparation skills
- Studies without a control or comparison group.

## Condition or domain being studied [1 change]

The last two decades witnessed the proliferation of policy, programs, interventions, experiments and other types of initiatives promoting home cooking and domestic cooking skills among adults, with ultimate goal of improving their diet and health. Their outcomes up to 2016 have been reviewed in several papers and grey literature reports. Nevertheless, no definitive conclusions about their impact have been yet drawn, on the grounds of there being limited, high-quality evidence of results.

This review takes new stock of such initiatives and their results up to 2018, systematically assesses their quality and meta-analyses findings whenever appropriate in order to estimate the size and significance of any positive effects on intended diet and health outcomes. Importantly, it clarifies the role of domestic cooking skills as an important mediator between promoting home cooking and achieving actual behavior and dietary changes. Lastly, it also identifies the characteristics that determine the effectiveness of initiatives.

A better understanding of the substantive outcomes of adult participation in home cooking initiatives that focus on raising domestic cooking skills makes a relevant contribution to the development and support of more effective public health interventions, particularly those targeting vulnerable populations at disproportionate risk of poor diet and diet-related diseases.

## Participants/population

All adults (18 years of age or older), irrespective of their physical and mental health status.

Excluded: Adults whom, by way of their professional occupation (e.g., chefs, food service staff, nutritionists and dietitians), are required or expected to have (or to acquire through formal education and/or training), extensive knowledge and/or experience in culinary arts; adults with severe mental or physical disability.

## Intervention(s), exposure(s)

Policy, programs, interventions, experiments and other types of initiatives intending primarily to promote home cooking among adults and entailing at least one component or treatment explicitly intended to increase their domestic cooking or food preparation skills, as described in "Hollywood, L., Surgenor, D., Reicks et al. (2017). Identification of behavior change techniques applied in interventions to improve cooking skills and food skills among adults. *CRFSN*, 1-14" and "Reicks, M., Kocher, M., & Reeder, J. (2018). Impact of Cooking and Home Food Preparation Interventions Among

Adults: A Systematic Review (2011–2016). *Journal of Nutrition Education and Behavior*, 50(2), 148-172."

Examples: cooking demonstrations, hands-on cooking classes, food literacy programs, nutrition education sessions, community kitchens, community gardens with a food preparation component, cooking skills training videos, weight loss camps, cooking courses.

### Comparator(s)/control

Control group in the same population (i.e., adults entering the study but not exposed to the intervention, or at least not at the same time as those in the treatment group).

Comparison group in a similar population (e.g., adults entering the study, but exposed to an intervention or treatment that does not intend to primarily promote home cooking, or to one that intends to primarily promote home cooking, but by means other than increasing adults' domestic cooking or food preparation skills).

### Context [1 change]

There are no restrictions as to the setting of the initiatives included.

Studies where the promotion of home cooking is a primary outcome but that do not entail a treatment or component explicitly intended to increase domestic cooking or food preparation skills (e.g., interventions promoting home cooking only through the provision of information about the potential positive diet and health outcomes of this behavior) are excluded.

Studies where the promotion of home cooking or the increase of domestic cooking or food preparation skills among adults are secondary or unintended outcomes are excluded. Examples are interventions involving food or cooking skills' training with the main purpose of improving the cognitive and motor abilities of adults with mental or physical disability; interventions promoting home cooking among adults with the main aim of improving their mental health status or social behavior; clinical trials providing limited or very basic home cooking or cooking skills' advice as part of a larger set of medical recommendations aiming to improve the diet quality and health status of patients with preventable chronic diseases.

### Main outcome(s) [1 change]

- Enhancement of the domestic cooking skills of adults participating in initiatives promoting home cooking.
- Improvement of diet quality, dietary intake and weight status.
- Prevention of diet-related chronic illnesses and associated risk factors.

### Measures of effect

- Enhancement of adults' domestic cooking skills from baseline to last available follow-up. There is currently no single, fully validated and widely accepted or employed measure of these skills. Hence, measures to be considered are self-reported level of cooking knowledge, level of self-efficacy or self-confidence to cook a meal from basic ingredients, or externally assessed ability to prepare fresh ingredients for cooking (as reviewed by McGowan, L., Caraher, M., Raats, et al. (2017). Domestic cooking and food skills: a review. *CRFSN*, 57(11), 2412-31). This outcome is part of the inclusion criteria.
- Improvement in diet quality, dietary intake and weight status from baseline to last available follow-up, assessed through

standard measures of fruit and vegetable consumption, total calorie intake, healthy eating (e.g., diet scores based on Food Frequency Questionnaires or 24-h dietary recalls, the Healthy Eating Index), BMI, weight loss and abdominal obesity.

- Decrease in risk factors for diet-related chronic illnesses from baseline to last available follow-up, assessed through standard measures for CVD (e.g., serum lipid concentrations, HDL level, blood pressure) and type 2 Diabetes (e.g., glycated hemoglobin (GHb), fasting blood sugar, insulin resistance).

These outcomes were not specifically targeted by the search strategy and are not part of the inclusion criteria.

### Additional outcome(s) [1 change]

- Increase in the frequency of home cooking or domestic food preparation, particularly from fresh or unprocessed foods, and improvement of the attitudes and intentions held towards these behaviors.
- Decrease in the frequency of consumption of away-from-home meals and convenience foods.

### Measures of effect

- Increase in the frequency of home cooking or domestic food preparation (particularly of fresh or unprocessed foods), and improvement of the attitudes and intentions held towards these behaviors from baseline to last available follow-up. Standard behavior frequency and attitude measures will be considered, as well as those specific to the domestic cooking and food domains (as reviewed by McGowan, L., Caraher, M., Raats, et al. (2017). Domestic cooking and food skills: a review. *CRFSN*, 57(11), 2412-31). These outcomes are not part of the review inclusion criteria.
- Decrease in the frequency of consumption of away-from-home meals and convenience foods from baseline to last available follow-up. Standard frequency of food consumption measures will be considered. These outcomes are not part of the review inclusion criteria.

### Data extraction (selection and coding)

Titles and/or abstracts of studies retrieved using the search strategy and those from additional sources will be screened independently by two review authors to identify studies that potentially meet the inclusion criteria outlined above. The full text of these potentially eligible studies will be retrieved and independently assessed for eligibility by two review team members. Any disagreement between them over the eligibility of particular studies will be resolved through discussion with a third reviewer.

A standardized, pre-piloted form will be used to extract data from the eligible studies for assessment of study quality and evidence synthesis. Extracted information will include: study setting, study population (participant demographics and baseline characteristics), details of the intervention and control conditions, study methodology (recruitment and study completion rates), outcomes (forms and times of measurement), indicators of acceptability to users, suggested mechanisms of intervention action and information for study quality assessment. Two review authors will extract data independently. Any discrepancies between them will be identified and resolved through discussion with a third review author. Missing data will be requested from study authors.

### Risk of bias (quality) assessment

An extant, validated tool for the quality assessment of the types of studies deemed eligible will be selected by the review team. Two review authors will independently assess the quality of included studies by considering the following characteristics: the overall quality of the study, external validity, study bias, confounding and selection bias, and statistical power of the study. Any discrepancies between them will be identified and resolved through discussion with a third review author.

### Strategy for data synthesis

We will first provide a narrative synthesis of the findings from the eligible studies, structured around the type of intervention, target population characteristics, type of outcome and intervention content, including summaries of intervention effects for each study and study quality assessment.

Results from eligible, high-quality studies, using the same type of intervention and comparator, and the same or equivalent outcome measures, will be pooled using a random-effects meta-analytical model. Based on this model, estimates of standardized mean differences for continuous outcomes and risk ratios for binary outcomes, as well as 95% confidence intervals and two sided P values for each outcome will be provided. In studies where the effects of clustering have not been taken into account, we will adjust the standard deviations for the design effect. At this time, publication bias will also be statistically assessed and reported.

Heterogeneity between the studies in effect measures will also be assessed using both the  $\chi^2$  test and the  $I^2$  statistic. We will consider an  $I^2$  value greater than 50% indicative of substantial heterogeneity. We will further conduct sensitivity analyses based on study quality. Finally, we will use stratified meta-analyses to explore heterogeneity in effect estimates according to: study quality, study populations, the logistics of intervention provision and intervention content.

### Analysis of subgroups or subsets

Data from randomized and non-randomized studies will be analyzed and presented separately. Sub-group analysis will be done by type of intervention, or more specifically, by type of intervention component or treatment intended to increase the domestic cooking skills of participants.

### Contact details for further information

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### Organisational affiliation of the review

None

### Review team members and their organisational affiliations [1 change]

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### Type and method of review

Intervention, Meta-analysis, Narrative synthesis, Systematic review

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01 March 2018

### Anticipated completion date

28 February 2019

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### Conflicts of interest

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English

### Country

Portugal, Switzerland, United States of America

### Stage of review

Review Ongoing

### Subject index terms status

Subject indexing assigned by CRD

### Subject index terms

Adult; Cooking; Diet; Feeding Behavior; Humans

### Date of registration in PROSPERO

31 August 2018

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30 July 2018

Details of any existing review of the same topic by the same authors

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

*The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.*

*The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.*

Versions

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