ISRCTN17551067 https://doi.org/10.1186/ISRCTN17551067

Can recipe-boxes help families eat healthier? A pilot trial in households with children in Birmingham

Submission date 01/10/2024	**Recruitment status** Suspended	[X] Prospectively registered [ ] Protocol [ ] Statistical analysis plan [ ] Results [ ] Individual participant data [ ] Record updated in last year
Registration date 02/10/2024	**Overall study status** Completed	
Last Edited 06/11/2024	**Condition category** Other	

Plain English summary of protocol

Background and Study Aims
A higher proportion of energy intake from home-prepared food and a greater frequency of home-prepared meals are associated with higher dietary quality. Recipe boxes are one intervention that may enable households to eat and prepare healthy meals at home. Qualitative research points to a range of promising benefits, including improved confidence in cooking, greater perceived meal healthiness, and reduced take-out. However, it remains unclear whether recipe-box interventions can improve dietary quality, are feasible and acceptable across the population, and can improve users' capabilities to prepare food that they value. This study will help to address these questions by conducting a randomised pilot and feasibility study (PFS), partnering with a commercial recipe-box company.

Who can participate?
A representative sample of households with children of primary and secondary school age in the city of Birmingham.

What does the study involve?
Households in Birmingham will be invited to take part in this study via a market research company. In total, approximately 300 households who express interest will be referred to the study coordination team, and in the experience of the market research company, approximately half of those referred (~150) will consent. Interested participants will complete a screening form with the market research company and will consent to their details being given to the study team. Interested participants will then be sent a link to an online landing page where the study procedures will be outlined, and participants will be asked to provide e-consent to take part. Once consented, participants will be asked to complete some dietary recalls using the Intake 24 platform and online questionnaires. Participants will then be randomised to either the intervention group or the control group. The intervention group will be offered an 8-week recipe-box subscription discounted by 40%, and the choice to continue for a further 12 weeks at a discount of 15%. The waitlist control group will receive an offer for the same discounted subscriptions 20 weeks after randomisation. Participants will be asked to complete the same online questionnaires and dietary recalls at 8 weeks and 20 weeks after baseline. A sample of

participants will be invited to complete qualitative interviews at baseline, 8 weeks, and 20 weeks from both the intervention and control groups.

What are the possible benefits and risks of participating?
Participants in the intervention group will receive discounts for the recipe-box subscription for 8 weeks, and the control group participants will receive the same discount after the 20-week study period. Participants will also receive £25 for completing surveys and interviews.

The research team do not anticipate that any procedures in the data collection will cause significant discomfort or inconvenience to participants. Participants will be informed that their participation is voluntary, that they do not have to answer any questions, and that they are free to withdraw at any time without providing a reason. Participants in the intervention group will need to pay for part of the cost of the recipe boxes and invest time in completing surveys and interviews. Participants may be exposed to normal risks and stress involved in cooking, or possibly stress from gendered cooking roles.

Where is the study run from?
The study is run from the Population Health Interventions research programme at the MRC Epidemiology Unit, University of Cambridge School of Clinical Medicine. The study is part of the SALIENT Food System Trials.

When is the study starting and how long is it expected to run for?
October 2023 to May 2025

Who is funding the study?
Economic and Social Research Council (ESRC)
UK Research and Innovation (UKRI)

Who is the main contact?
Prof Martin White (Principal Investigator), martin.white@mrc-epid.cam.ac.uk
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Contact information

Type(s)
Principal investigator

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
G122382

Study information

Scientific Title
Exploring the impact of recipe-boxes on dietary quality and food agency: a pilot RCT in households with school-aged children in Birmingham

Acronym
TRILOGY (impacT of Recipe-boxes on dIetary quaLity and fOod aGencY)

Study objectives
1. The recruitment strategy and enrolment procedures will be acceptable to participants.
2. The discounted recipe-box subscriptions will be acceptable to the intervention group participants.
3. Allocation to the waitlist control group will be acceptable for waitlist control group participants.
4. The level of adherence to allocation will be high in the intervention group and in the control group.
5. The recruitment strategy and enrolment procedures will be feasible to deliver.
6. The regular use of recipe-boxes in the intervention group will enhance the "food agency" of the primary food provider.

7. The regular use of recipe boxes in the intervention group will lead to intermediaries in our Theory of Change.

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 06/09/2024, Humanities and Social Sciences Research Ethics Committee, University of Cambridge (The Old Schools, Trinity Lane, Cambridge, CB2 1TN, United Kingdom; +44 (0)1223 766238; hssrec@admin.cam.ac.uk), ref: 24.374

Study design
Parallel unblinded randomized pilot and feasibility trial

Primary study design
Interventional

Study type(s)
Prevention, Quality of life

Health condition(s) or problem(s) studied
Promotion of improved dietary quality, food and cooking skills, food agency, and capability wellbeing. Prevention of diet-related diseases (in general).

Interventions
This study is a parallel, unblinded, randomised pilot and feasibility trial, with 1:1 allocation between an intervention group receiving discounted recipe box subscriptions and a waitlist control group receiving the recipe-box subscriptions after the trial ends.

Intervention
The intervention group will receive a 40% discount for a recipe-box subscription from a commercial recipe-box company: up to 5 recipes per household per week, with a maximum of 5 portions per box and 20 portions total per week, for 8 weeks, with the freedom to choose any meals available on the company website. However, participants ordering 5 portions per recipe will only be able to order a maximum of 3 recipes, due to the size of the recipe box. Note that the structure of the company's pricing means that the cost per portion (with or without the discount) decreases if more recipes and portions are ordered. From data shared by the recipe-box company on average prices, we expect the average cost for 4 people with 4 recipes to be £32.70 per week (£2.04/portion), for 3 people with 4 recipes to be £33.98 (£2.83/portion), for 2 people with 4 recipes to be £25.58 (£3.20/portion), or 5 people with 3 recipes to be £36.98 (£2.47 /portion). Participants will register as customers on the company's website and input their trial code to receive their discount. Participants will be able to select any meals on the menu for that week, including “upgrades” and “sides” (which will not be discounted) and can choose between one and five portions per meal. After the first box, delivery will cost £3.99 per recipe box at purchase (not discounted). Whilst we will encourage households to order four recipes per week, households can order two or more recipes per week. We cannot easily standardise the intervention “dose” in this free-living sample. Similarly, we cannot prevent participants from ordering additional recipe boxes without a discount, although we consider this unlikely given the intensity of the subscription. Participants will be charged weekly and can elect to skip weeks, pause or cancel at any time.

Participants will be asked to order on the company's website by Friday noon for the following week; however, participants' "ordering deadline" will be participant-specific: the day of the week and time they placed their first recipe-box order, 3 days before delivery. Note that participants will be able to change their delivery day before their ordering deadline. Participants will receive the same weekly reminders to order that regular customers receive. Participants can see menus and order for up to three weeks in advance and edit orders up to three days before the scheduled delivery day. As per the company's standard procedures, if participants miss their ordering deadline, and do not cancel their subscriptions or elect to skip the next week, recipes will automatically be selected (based on what the recipe-box company predicts they would enjoy) and delivered at the discounted price (and the participant will be charged). However, at the end of the 8-week discount, the subscription will not automatically continue. To continue ordering at a 15% discount for another 12 weeks, participants will either need to 1) opt-in to an invitation sent 4 weeks into the trial, or 2) continue ordering after their subscription is forcefully paused after 8 weeks. The recipe-box company will share data on orders from the account associated with the discount code if the participant consents for the company to do so.

Control
The control group will not receive a recipe-box discount initially and will agree to not purchase recipe boxes from any source during the trial until after the week 20 post-randomisation follow-up surveys are completed. After completing surveys at week 20 post-randomisation, the control group will be offered the same discounted subscription as received by the intervention group (8 weeks at 40% followed by 12 weeks optional at 15%) and will have four weeks to activate their discount code.

Randomisation
Stratified randomisation will be used using strata defined by ethnicity, IMD, and baseline dietary quality (AHEI), of the primary food provider. Ethnicity and IMD were chosen because they have the potential to be effect modifiers based on the literature for similar dietary public health interventions. With 3 stratification variables, there will be 2 x 2 x 2 = 8 strata; a separate randomisation list will be generated for each stratum with a block size of 4, using Stata statistical software, and incorporated into the study database before the start of the study. Participant entry into the trial will be staggered over approximately two to four weeks. This will reduce the time between baseline data collection and allocation and therefore can be expected to improve retention rate.

Intervention Type
Mixed

Primary outcome(s)
Primary objectives and outcome measures
1. Acceptability of the recruitment strategy and enrolment procedures measured from the sample size attained at enrolment
2. Acceptability of the recipe-box subscription at the discounted rate measured from the retention rate at eight weeks
3. Acceptability of allocation to the waitlist control measured from the retention rate at eight weeks
4. Sample size needed for the main trial to detect an average treatment effect in the primary outcome in the main trial (dietary quality) at 8 weeks with α of 0.05 and power of 0.90

Key secondary outcome(s))

Qualitative
1. Perceived benefits of the recipe-box subscription and barriers to participation in the intervention group measured from semi-structured interviews at week 8 and week 20.
2. Observation of hypothesised mediators in the Theory of Change measured from semi-structured interviews in the intervention group at weeks 8 and 20.
3. Perceived longer-term benefits (e.g. independently planning and preparing meals) measured from semi-structured interviews at weeks 8 and 20.
4. Effects on participants' food agency, from semi-structured interviews at week 8.

Acceptability
5. Acceptability of the recruitment strategy and enrolment procedures measured from the recruitment rate at enrolment.
6. Acceptability of the recipe-box subscription at the discounted rate measured from the retention rate at 20 weeks, recipe-box ordering rate over weeks 1 to 8, and from semi-structured interviews at weeks 8 and 20.
7. Acceptability of allocation to the waitlist control group measured from the retention rate at 20 weeks and semi-structured interviews at weeks 8 and 20.

Feasibility
8. Feasibility of the recruitment strategy and enrolment procedures measured from the sample size attained at enrolment, recruitment rate (pre-enrolment), and semi-structured interviews at baseline.
9. Level of adherence to allocation measured: for the intervention group, ordering 2 to 4 recipes weekly from weeks 1 to 8; for the waitlist control group, not obtaining recipe boxes from any sources from baseline to week 20.
10. Fidelity of trial procedures (e.g. notifications and follow-up by study team) throughout measured from interviews with study teams.

Completion date
30/05/2025

Eligibility

Key inclusion criteria
1. Having at least one child attending primary or secondary school in the household.
2. Having access to cooking rings, an oven, and a fridge at home (without these participants could not prepare the recipes).
3. Confirming willingness to complete the trial if randomised to either group. We require a control group for comparison. Further, greater and differential loss to follow-up in the control group could introduce biases.

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit

18 years

Upper age limit
130 years

Sex
All

Key exclusion criteria
1. More than five household members.
2. Have used recipe boxes in the previous 3 months.
3. The main food provider (who will complete the surveys) who cannot read, write, or speak in English.
4. Not having access to the internet and a digital device (smartphone, tablet, or laptop).
5. Any member of the household having recently participated (past 3 months), currently participating, or scheduled to participate, in another diet-related trial, cohort, or clinical study.
6. Planning to be away from their home address for more than one week during the 8-week initial trial period, or anytime during baseline or 8-week assessment points.

Date of first enrolment
02/10/2024

Date of final enrolment
31/10/2024

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Birmingham
Birmingham
Birmingham
United Kingdom
Recruiting across several parliamentary wards of Birmingham

Sponsor information

Organisation
University of Cambridge

ROR

https://ror.org/013meh722

Funder(s)

Funder type
Government

Funder Name
Economic and Social Research Council

Alternative Name(s)
Economic and Social Research Council (ESRC), ESRC

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Funder Name
UK Research and Innovation

Alternative Name(s)
UKRI

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
Data generated and/or analysed directly by the research team (e.g. data from dietary recalls and other surveys) during the current study will be available upon request from Professor Martin White, University of Cambridge (martin.white@mrc-epid.cam.ac.uk). These requests will be

reviewed by the Principal Investigators for scientific merit and integrity before release, in line with the MRC Epidemiology Unit's Data Sharing Policy. Shared datasets will be anonymised. Participants will have consented for anonymised data to be shared.

The datasets generated by the recipe box company (e.g. on what recipes participants ordered) during and/or analysed during the current study will not be available due to commercial sensitivity.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes