



Public Health
Research Consortium

Research to support the evaluation and implementation of adult cooking skills interventions in the UK: phase 1 report

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Contributors

MW, AA and JA had the idea for the study, developed the study design and secured funding. The methods were further developed by all authors and fieldwork and analysis was undertaken by JA, ES and LP. All authors contributed to data interpretation. The report was drafted by JA and MW. All authors commented on drafts and approved the final version. MW is guarantor for the work.

SCIENTIFIC BACKGROUND

The growing obesity epidemic in the UK demands interventions to reduce the significant current and future burden to society resulting from health, social and economic outcomes. Obesity is caused by excess energy intake over energy expenditure, resulting from either excess calorie consumption, insufficient physical activity or both. Such physiological imbalance is, in turn, dependent on highly complex environmental mechanisms that promote excessive eating or inadequate physical activity at all levels of society and in all settings.¹

Anecdotal evidence suggests there has been a deskilling of the UK adult population over the last two to three decades with respect to cooking skills, resulting in a growing proportion of adults who are unable to cook meals from raw ingredients ('from scratch').

The Low Income Diet and Nutrition Survey found that around 5% of children and 12% of adults lived in a household where the main food provider did not feel able to "prepare a main dish (e.g. shepherd's pie or curry) from basic ingredients" on their own. Around 22% of adults did not have these skills themselves, and lack of skills was more common in men and younger adults.² These data were collected from the most deprived 15% of UK households in 2003-05.

Recently, a number of interventions have been developed to address this skills gap, most notably Jamie Oliver's '*Ministry of Food*'. Such interventions typically involve adult group cooking classes, devoted to imparting the knowledge and skills necessary to cook basic, healthy meals. However, such interventions are at a relatively early stage of development from an empirical and theoretical point of view, with little analysis of their theoretical basis, few rigorous outcome evaluations or translational studies and no systematic review evidence to support their wider implementation.

Nevertheless, such interventions may have the potential for a significant population impact and may gain favour politically as a potentially valuable contribution to tackling the obesity epidemic.

The Department of Health (DH) has commissioned a systematic mapping and evidence synthesis of adult cooking schools from the EPPi Centre, which was completed in July 2011. The protocol for this review provides more detailed background to theory and research on adult cooking skills, which will not be repeated here.³ We have been given access to a preliminary version of this review.

This report is of an initial phase of research lasting three months (May-July 2011) which scoped the range of current adult cooking skills interventions in England in order to identify suitable examples that might form the subject of a definitive outcome evaluation during 2011-13.

OBJECTIVES

The objectives of this work were to:

1. Identify the range of existing adult cooking skills interventions that are presently implemented in England which meet key criteria.
2. Collect detailed information on each identified intervention.
3. Make a judgement on the suitability of each identified intervention for rigorous outcome evaluation.
4. Prepare a report for DH Policy Research Programme on the results of this scoping work, indicating the potential for a definitive outcome evaluation of adult cooking skills interventions in England.

METHODS

This work involved five stages: searching, screening, data collection, appraisal, and selection.

Stage 1. Searching

Potential interventions were identified using the following strategies:

a) Search of published and grey literature

This was conducted by the EPPI Centre as part of their systematic review of cooking skills interventions and was shared with us in May 2011.

b) Search of research and trial databases

We searched the main trial and research databases for relevant, on-going interventions in England.

c) Search of the internet

We searched google.co.uk, utilising combinations of a range of relevant key words (e.g. cook/cooking, skills, education, school etc.) and accessed the first 100 hits of each search.

d) Search of specific organisations

We searched the web sites of a range of relevant voluntary, community and public sector organisations working in England.

e) Direct email enquiries

We emailed standard enquiry messages to relevant organisations, including: all Primary Care Trusts (PCTs) in England, all local authorities (LA) in England, all regional obesity and Change4Life leads within Strategic Health Authorities (SHAs) in England, and regional voluntary sector network organisations.

Stage 2: Screening

We used initial information to screen potential interventions to confirm that they met our definition of an adult cooking skills intervention. That is, an intervention which meets the following criteria:

Criterion	Justification
Aims to develop basic kitchen and cooking skills	<i>Fundamental aim of the intervention</i>
Targets adults aged 16 years or over	<i>Cooking skills now taught in all schools, so focus here is on adults</i>
Targets non-professional cooks	<i>Courses should be aimed at novice cooks to support domestic cooking and not offer a formal qualification that could be used to support professional activity</i>
Involves use of a written curriculum (e.g. Learning experiences, competencies etc.)	<i>Written curriculum is essential to enable evaluation of the intervention content and ensure fidelity if rolled out</i>
Involves face-to-face interaction between tutor and participant	<i>The focus on practical cooking skills for novices necessitates a face-to-face course, rather than any form of distance learning</i>
Involves more than one session, or an intensive single day	<i>Interventions need to lead to sustainable changes in demonstrable cooking skills, hence very short courses unlikely to offer the reinforcement necessary to achieve this</i>
Is run on a not-for-profit basis	<i>Interventions aimed at socio-economically deprived populations are highly unlikely to be profitable</i>

Stage 3. Data collection

More detailed information was sought from all interventions that screened positive in stage 2 on the nature of the intervention. In particular, we requested copies of all course materials. From the available documentation, we attempted to extract the following information:

- Aims
- Target population
- Setting
- Staffing
- Content and documents
- Number of sessions per course
- Length of each session
- Cost to customer
- Throughput – in total, per session/course, number of sessions/course run to date, frequency of sessions/courses
- Start date of programme
- End date, if any
- Staff training and quality assurance
- Theoretical basis/behaviour change techniques used (if contacts are unaware of any particular theoretical basis, we will attempt to infer this from other information), categorised using existing frameworks
- Ongoing evaluation, data collection
- Outcomes studied in evaluation

- Evidence of effectiveness
- Evidence of acceptability
- Set up costs
- Running costs
- Evidence of cost acceptability
- Funding and length/security of funding

Stage 4. Appraisal

To determine the likely impact of interventions on dietary behaviour change, we “theory mapped” interventions using all of the written information provided to us. This process involved using a validated tool to identify the key behaviour change theories used by interventions.⁴

Stage 5. Selection & recommendations

Interventions meeting the inclusion criteria for an adult cooking skills intervention were summarised. We make a number of recommendations for further definitive work including options for interventions that could be evaluated and appropriate methods of evaluation. Our recommendations are based on both the findings of this scoping study and the EPPI centre systematic review.

RESULTS AND DISCUSSION

Stages 1 & 2: Searching & screening

The EPPI centre systematic review identified 13 potentially relevant studies reporting cooking skills interventions, only five of which had a controlled design and only one of which was a sufficiently large, well-conducted trial. However, this intervention was delivered to people aged over 65 years (average age 76 years), so may not be entirely applicable to the wider adult population. Furthermore, only six of the interventions were conducted in England and two were reported more than ten years earlier. The review thus provided few interventions that could offer the potential for a formal outcome evaluation.

The Figure shows the results of the email screening and searching procedures conducted during stages 1 and 2. Two further interventions were identified by internet searches, including searches of relevant research and trial databases, and searches of relevant specific web sites.

Overall, we identified 14 interventions that met our inclusion criteria.

We were disappointed by the small number of interventions identified. We do not believe that we have identified all interventions that meet our inclusion criteria currently running in England. Nor do we have a clear idea of what proportion of interventions we have been able to identify, since there was no clear denominator.

Nevertheless, we believe that our searching procedure was the most efficient approach to the task given the resources and time available to us. In particular, we believe that our approach allowed us to ‘find the interventions that wanted to be found’. Individuals involved in other interventions that did not receive, or did not respond to, our enquiries may be less likely to engage in evaluative research. We also believe that our search strategy allowed us to identify the main types of interventions available, if not all examples of each type. Obviously, the sample obtained may be biased in some ways, but this is impossible to assess definitively.

Stages 3 & 4: Data collection & appraisal

The Table provides a summary of interventions that met our inclusion criteria.

We were unable to obtain all of the information we wished to in all cases. This was often because contacts did not know specific details (e.g. set-up costs), detailed information was not provided (e.g. participant/tutor course materials), or arrangements for follow up telephone calls were not kept, despite numerous attempts to rearrange calls and re-contact relevant individuals. As many interventions are funded by PCTs, the on-going security of funding is currently unknown in many cases.

Stage 5. Selection & discussion

A number of issues were raised during this work. This is expected given the scoping and exploratory nature of the study, but has important implications for any evaluation.

a) Train the trainers vs. direct delivery

Most interventions involve direct delivery of training to clients. However, some interventions, in particular *Let's Get Cooking*, provide training for potential trainers who are then tasked with delivering courses to community clients.

It is possible that 'train the trainers' models are more scalable and more efficient. However, it is also possible that the fidelity of any intervention actually delivered to clients is lower when a 'train the trainers' model is used. Thus, whilst it may be cheaper to train trainers, the clarity of the message received by clients may be lost.

b) Community vs. other locations

The majority of interventions were delivered in community locations such as *SureStart* centres, community centres, or bespoke premises located in communities. However, one intervention (*Cook Well Work Well*) offered peripatetic training in workplaces.

It is possible that training provided in community locations fails to target particularly hard to reach groups, such as working men. Providing training in workplaces, part funded by employers, may also offer an alternative funding model.

c) NHS or local agency funding vs. social enterprises

Most interventions were funded by NHS organisations, particularly PCTs. However, two had achieved, or were attempting to achieve, a level of self-sustainability through establishment of social enterprises: *Can Cook* and *Jamie's Ministry of Food*.

Long-term sustainability is important, especially given the increasing pressure on health and public health budgets

d) Behaviour change techniques

Theory mapping relies on written information. However, the written information provided to us on interventions was not always comprehensive. Our theory mapping is, therefore, exploratory.

Most interventions that we theory mapped used a large number of different behavioural change techniques.

Not surprisingly, the most commonly used behaviour change techniques were "providing information on the link between behaviour and health", "providing instruction on how to perform the desired behaviours", "providing opportunities to practice desired behaviours", "providing opportunities for social comparison" and "prompting self monitoring of current behaviour".

Goal setting and reviewing are behavioural change techniques that are known to be particularly effective. These were less frequently used than some other techniques.

RECOMMENDATIONS

We focus this discussion on the implications of our findings for future evaluation of cooking skills interventions.

We recommend that an outcome evaluation, involving a randomised controlled trial (RCT), a process, and an economic evaluation, is conducted. This is likely to take 24-36 months to complete.

We recommend that any RCT is preceded by feasibility work to establish whether cooking skills interventions are likely to be effective. This is likely to take around 6 months to complete.

To maximise the value-for-money of an outcome evaluation, it is important that decision makers are both able and willing to act on the findings.⁵ For instance, an evaluation of an intervention that can not be feasibly commissioned within existing structures is unlikely to be useful. Nor is an evaluation of an intervention that will, or will not, be rolled-out for political reasons, rather than scientific evidence of effect. We have considered these factors in our proposals below.

Feasibility work

This should explore the potential impact, fidelity, acceptability and unexpected consequences of existing cooking skills interventions, as well as the feasibility of conducting an RCT and readiness of the intervention for scaling-up and adopting in routine practice.⁵ It should also aim to ascertain whether genuine equipoise exists concerning potentially evaluable intervention(s), both for the intervention team(s) and the research team.

The potential impact of cooking skills interventions depends on both the number of people likely to benefit, and the benefit to each individual. Data from the Low Income Diet and Nutrition Survey suggests that the potential reach of cooking skills interventions is between 12 and 22% of the low income population.² We recommend relevant (but, as yet, unpublished) data from the recent National Diet and Nutrition Survey are analysed to explore the prevalence of poor cooking skills in the wider (non-low income) population.

The systematic review recently completed by the EPPI-Centre found little robust evidence concerning the potential benefit of cooking skills interventions to individuals. It is possible that cooking skills interventions do not necessarily attract those with poor existing skills, knowledge or confidence. We recommend further analysis of routine data collected by existing interventions to explore the baseline characteristics of those attending cooking skills interventions to explore if they are attracting the intended population. If not, further development work should determine how this can be achieved.

Fidelity includes both the similarity of the intervention when delivered by different tutors, as well as the similarity of the intervention delivered to that intended. We recommend that this is assessed using observational methods.

Acceptability and unexpected consequences should be explored among a range of stakeholders, including clients, tutors, and those who designed, and have budgetary responsibility for, interventions. We recommend this is assessed using group and individual qualitative interviews.

Pilot work is often undertaken to determine recruitment and retention rates to a research study, as well as the feasibility of proposed measurement procedures. Learning from previous research in this area reduces the need for substantial pilot work.^{3, 6-8} Nevertheless, the numbers available for a trial will need to be confirmed and recruitment rates estimated in this phase. The potential for translation of the intervention(s) into routine practice will also need to be assessed in terms of feasibility and cost.

Randomised controlled trial

Subject to the results of feasibility work, we recommend an RCT as follows:

a) Population

Community dwelling adults, living in areas of high deprivation, who self-identify as wishing to improve their dietary knowledge and cooking skills.

Dietary patterns, and related health outcomes, are socio-economically patterned.⁶ Individuals living in areas of high deprivation are, therefore, most likely to benefit from cooking skills interventions. Using a 'self-referral' model reflects the approach used by the great majority of interventions identified.

b) Intervention studied

An enhanced version of *Jamie's Ministry of Food* and/or a combination of a number of local interventions.

Given the sample size required (see below), any intervention studied will have to be relatively large. In addition, an intervention with a strong theoretical basis is likely to be most effective.⁹

Jamie's Ministry of Food is the only single intervention identified that could fulfil the sample size requirements in 12 months. This is because it delivers the same intervention in five centres in England simultaneously. However, theory mapping of currently available information suggests that this intervention may not make best use of behaviour change theory.

We identified a number of smaller, single site interventions that appear to make good use of behaviour change theory. However, none of these alone would be large enough to fulfil the sample size requirements over a 12 month recruitment period.

We recommend either or both of the following options:

- i. *The Jamie Oliver Foundation* (responsible for *Jamie's Ministry of Food*) is approached to discuss their willingness to allow more detailed analysis of their intervention and develop their programme to make more use of behaviour change theory, with a view to taking part in an RCT.
- ii. A number of existing local interventions, which make good use of behaviour change theory, are approached to discuss if their programmes could be harmonised to establish a common curriculum (e.g. common essential principles and features of the intervention) for delivery at a number of sites, with a view to taking part in an RCT.

There are a number of pros and cons to pursuing either, or both, of these alternatives:

- i. Both options will require substantial buy-in and commitment from the organisations involved. Any intervention teams involved would need to be made fully aware of the implications of participating in a trial, both in terms of the practical demands and in terms of the impact of any findings (i.e. the possibility of positive or negative results)
- ii. Asking a number of existing local interventions to come together and agree a common curriculum will require substantial negotiation and consensus-building. This may not be

possible on the scale required. It will almost certainly take substantial time, with subsequent delays on commencing an evaluation.

- iii. Both options may require provision of additional funding in order to sustain interventions throughout the period of evaluation. This is most likely for the second option.
- iv. Conducting RCTs on both options simultaneously would involve conducting two very similar, but essentially separate, RCTs. These could be performed in parallel and so not delay any evaluation, but will impact significantly on evaluation costs.

c) Comparator

No intervention, using a wait-list control.

We believe it would help recruitment and retention to use a 'wait-list control' design. Clients would be randomised to either receive the intervention immediately or following a waiting period of at least 12 months.

d) Outcomes and outcome measurement

Primary outcome: a marker of dietary quality, such as fruit and vegetable intake or dietary fat intake.

Other outcomes: other markers of dietary quality, such as per cent of dietary energy derived from total fat and saturated fat; salt intake; cooking skills and confidence; and healthy eating knowledge. Potential unintended outcomes of the intervention(s) should also be measured.

We recommend that, during the pilot work, a detailed logic model is developed, specifying all of the relevant processes and intermediate outcomes, such as moderators and mediators of the main outcome(s), as well as primary and secondary outcomes, so that these can be fully specified in a trial protocol.

We recommend that dietary quality is measured using the multiple pass 24hr recall method on at least one weekend day and week day on each occasion. This is an adaptation of the method used in the Low Income Diet and Nutrition Survey.⁷

We recommend that dietary assessment is sub-contracted to an agency with relevant experience and access to researchers across England (e.g. the National Centre for Social Research – NatCen – which conducted both the National Diet and Nutrition Survey, and the Low Income Diet and Nutrition Survey).

Other secondary outcomes should also be measured using validated tools.⁸

We recommend that main trial outcomes should be assessed shortly after completion of the intervention (i.e. at about 3 months from baseline) and after 12 months, to demonstrate sustainability of intervention effects.

Consideration will also need to be given as to whether outcomes should be measured among other household members or just the course participant. Measuring the wider impacts of the intervention would be desirable, but presents numerous difficulties and would add considerably to the cost of any trial.

e) Sample size

Around 335 participants per trial arm – that is, 335 intervention and 335 control participants per intervention studied.

A preliminary sample size calculation was conducted. A sample of 335 per arm at follow up would give 80% power to detect a difference between intervention and control participants in change in daily fruit and vegetable consumption between baseline and follow up of 40g per

day. This is the level of change found in other successful dietary interventions and is “clinically” important.

Previous research suggests that about 33% of participants would drop out of an RCT between recruitment and follow up.⁸ Around 500 individuals per trial arm would, therefore, have to be recruited to achieve a final sample of 335.

Exact sample size requirements would be different if a different primary outcome were chosen. However, any effect on total sample size from changing the primary outcome is likely to be small. The choice of primary outcome will need to be specified in advance by DH. Any trial is likely to require a cluster RCT design and the number of clusters will also influence the sample size, because a cluster RCT usually requires a larger sample size than a simple RCT.

f) Analysis

An intention-to-treat analysis, conducted by an appropriately qualified statistician.

This evaluation of a complex intervention will require a complex analysis strategy. We recommend using multivariate techniques to take into account: personal characteristics of clients; explore the effect of baseline cooking skills, confidence and knowledge; and explore differential impacts in different sub-groups of the population.

Multilevel (hierarchical) analysis techniques, taking into account moderating and mediating factors at individual (e.g. age and gender of clients) and group (e.g. setting, age and gender of tutors) levels, will be needed.

Process evaluation

A process evaluation will provide information to explain the results found in the RCT. For example, if the intervention is not found to be effective, the process evaluation should shed light on why this is. We recommend a process evaluation conducted in parallel with the RCT exploring uptake, fidelity, on-going attendance, and experience of the intervention. This should include both qualitative (e.g. interviews) and quantitative (e.g. assessment of attendance figures) elements.

Economic evaluation

An economic evaluation will provide decision-makers with information on the overall costs and effects of the interventions. We recommend that the resource consequences and outcomes of interventions studied are assessed in order to determine if they are unambiguously efficient and if not, what the costs and consequences are. We also recommend that the potential for economic modelling to determine the impact of the intervention on cardiovascular disease and other outcomes is explored. This will allow the feasibility of a formal cost-effectiveness analysis to be determined.

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Figure – Results of email inquiries searching for cooking skills interventions

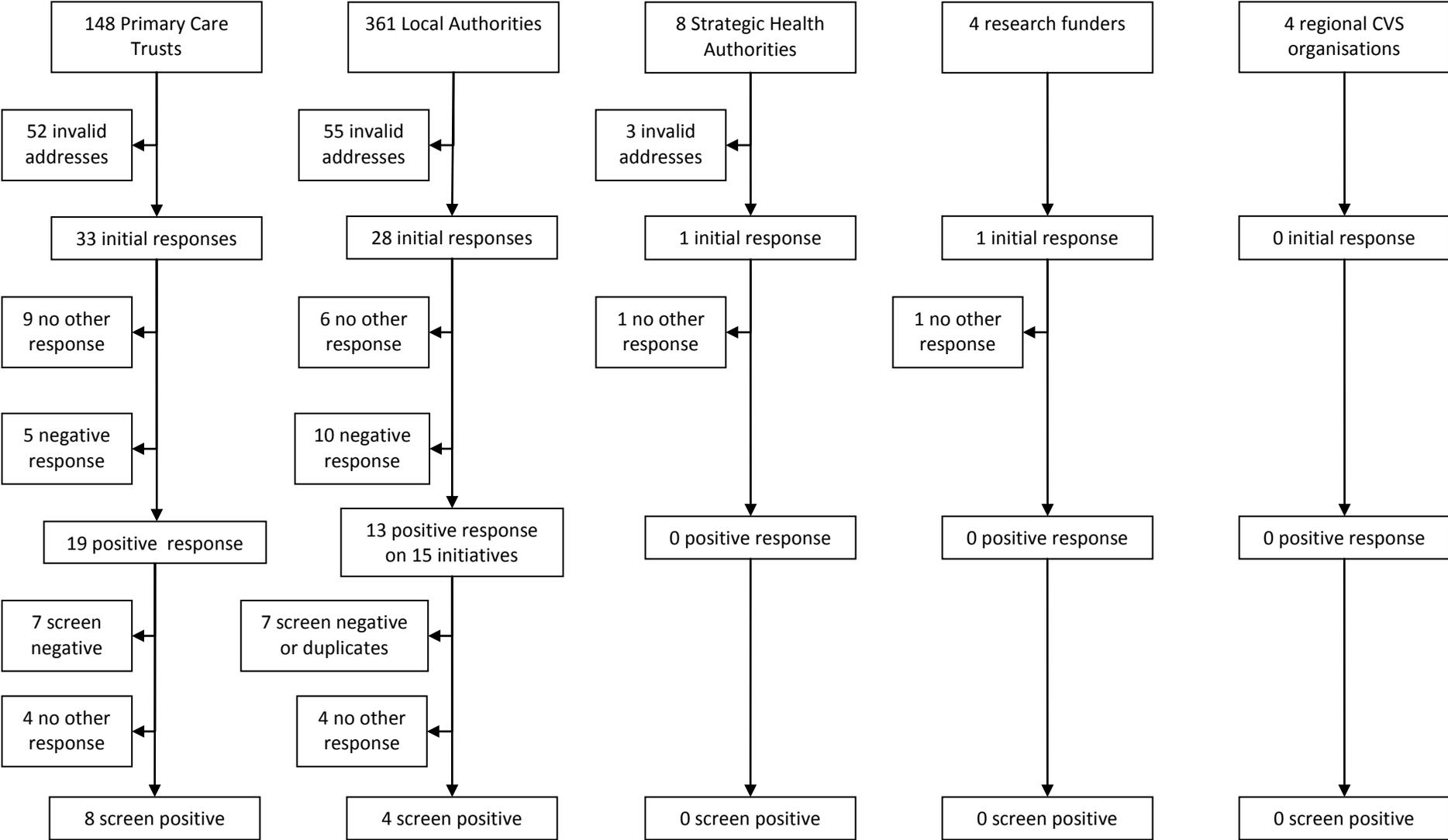


Table – Summary of interventions that screened positive

Name of intervention (location)	Target Population	Setting	Training model	Start-end dates	Format	People per course	Throughput per year	Set up costs	Running costs	Up front cost	Funding	Theories identified during theory mapping
Can Cook (Liverpool)	Adults	Bespoke studio and outreach tents	Directly train clients	2007-ongoing	2hr/wk. x 5-6wks; or full day	10-20	Unknown	Unknown	Unknown – now run as a social enterprise	Free	PCT, lottery, social enterprise	Materials supplied not sufficient to conduct theory mapping
CookWell in Sandwell (W Midlands)	Adults children aged 13+ if accompanied by an adult	Community venues	Directly train clients	2008-ongoing	2hrs/wk . x 6 wks.	4-16	Unknown	Unknown	~£150 plus staff time	Free	PCT	1. Info on behaviour-health link 8. Instruct 12. Self-monitoring 14. Contingent rewards 17. Behavioural practice 19. Social comparison
More Nosh for Your Dosh (Shropshire)	Adults from deprived backgrounds	Community centres	Directly train clients	2007-13	2hrs/wk . x 3 wks.	~6	~40	Unknown	£30 per person	Free	NHS	1. Info on behaviour-health link 8. Instruct 14. Contingent rewards 17. Behavioural practice 21. Identify self as role model
Cook4Life (Richmond)	Parents of young children and adults from deprived areas	Sure Start centres	Directly train clients	2009-12	2hrs/wk . x 5 wks.	8+	~185	~£900+	£100 per person plus £20 per child for crèche	Free	Local authority and Sure Start	1. Info on behaviour-health link 4. Intention formation 8. Instruct 11. Goal review 12. Self-monitoring 13. Feedback on performance 14. Contingent rewards 17. Behavioural practice 19. Social comparison
Jamie's Ministry of Food (Bradford, Leeds, NE, Rotherham, Stratford)	Adults; some child/parent sessions	Bespoke "shops" and mobile units	Directly train clients	On-going	10 x 90mins	8	>1000	£130-140k	£140-150k pa per centre	£3.50-£8	NHS, local authority, social enterprise	1. Info on behaviour-health link 9. Demonstrate behaviour 17. Behavioural practice 19. Social comparison

Table cont.

Name of intervention (location)	Target Population	Setting	Training model	Start-end dates	Format	People per course	Throughput per year	Set up costs	Running costs	Up front cost	Funding	Theories identified during theory mapping
Let's Get Cooking (NW & SW)	Sure Start staff in NW & SW regions	Unknown	Train trainers	2009-10	1 day training course	~15-20	116 trainers; 240 participants	£70,000 set up & running	£70,000 set up & running	Free	DH via C4L	4. Intention formation 8. Instruct 9. Demonstrate behaviours 16. Behavioural contract 17. Behavioural practice
Cook Well Work Well (peripatetic)	Adults working in participating organisations	Work sites	Directly train clients	2010-?	1 session/wk. x 3 wks.	~15-20	55	Unknown	Unknown	Free	DH via C4L	1. Info on behaviour-health link 4. Intention formation 5. Barrier identification 9. Demonstrate behaviour 11. Goal review 12. Self-monitoring 13. Feedback on performance 17. Prompt practice 19. Social comparison
Cook and Eat (Rotherham)	Adults with little or no cooking skills	Community health centres	Directly train clients	Unknown	5 x 3hrs	~6-12	Unknown	Unknown	£20 per person plus staff time	Free	"Main-stream" NHS/PCT	1. Info on behaviour-health link 2. Info on consequences of behaviour 8. Instruct 12. Self-monitoring 13. Feedback on performance 17. Behavioural practice 19. Social comparison
Cooking4Life (Camden)	Adults in hard to reach groups (men, learning difficulties, deprived areas)	Community centres	Directly train clients	2005-unknown	8 x 2hrs	max 8	Unknown	Unknown	£20 per person plus staff time	Free	NHS Camden	1. Info on behaviour-health link 2. Info on consequences of behaviour 5. Identify barriers 8. Instruct 10. Goal-setting 11. Goal review 12. Self-monitoring 17. Behavioural practice 19. Social comparison

Table cont.

Name of intervention (location)	Target Population	Setting	Training model	Start-end dates	Format	People per course	Throughput per year	Set up costs	Running costs	Up front cost	Funding	Theories identified during theory mapping
Health Eating on a Budget (Newcastle)	Individuals aged 14y+	Sure Start centres	Directly train clients	Unknown	3hrs/wk . x 6 wks.	6-10	Unknown	Unknown	£500 pa	£65	Sure Start	1. Info on behaviour-health link 2. Info on consequences of behaviour 5. Identify barriers 8. Instruct 9. Demonstrate behaviour 11. Goal review 12. Self-monitoring 13. Feedback on performance 17. Behaviuoral practice 19. Social comparison
Get Cooking (Dudley)	Adults living in deprived areas with poor diet	Community centres	Directly train clients	~2005-ongoing	6 x 2hrs	4-10	~114	Unknown	£190 per person	Free	“Main-stream” NHS/PCT	Materials supplied not sufficient to conduct theory mapping
Cook Yourself Slim (Newcastle)	Adults	College and schools	Directly train clients	Unknown	10 x 2hrs	10	Unknown	Unknown	Unknown	Free	City Council	1. Info on behaviour-health link 8. Instruct 12. Self-monitoring 13. Feedback on performance 17. Behaviuoral practice 19. Social comparison
Food4Health (M'brough)	People who work/volunteer for community groups in M'brough	M'brough College & community	Train trainers	2010-11	6 x 3hrs	12	72 trainers	Unknown	£3452 per course	Free	M'brough Healthy Town	Materials supplied not sufficient to conduct theory mapping
Cook4Life (Bolton)	Adults	Community colleges	Directly train clients	2010-ongoing	5-7 x 2hrs	6	Unknown	Unknown	Unknown	£2/sesion	NHS Bolton	Materials supplied not sufficient to conduct theory mapping