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Maintaining a healthy weight and preventing excess weight gain in children and adults – partial update of CG43

Evidence Review 2: Qualitative evidence review of the most acceptable ways to communicate information about individually modifiable behaviours to help maintain a healthy weight or prevent excess weight gain.

Evidence review for Centre for Public Health at NICE

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Contents

1 Executive Summary 5
1.1 Introduction 5
1.2 Methods 5
1.3 Results 6
1.4 Evidence statements 7
2 Introduction 18
2.1 Context 18
2.2 Aims and objectives 18
2.3 Research questions 18
3 Methods 19
3.1 Scope of the review 19
3.2 Systematic searches 21
3.3 Selecting studies for inclusion 23
3.4 Data extraction and quality appraisal 26
3.5 Thematic analysis and synthesis 27
4 Results 31
4.1 Overview of included studies 35
4.1.1 Quality Assessment 35
4.1.2 Study population 35
4.1.3 Relevance assessment 37
4.1.4 Contribution to the review 38
4.1.5 Interpretation 38
4.2 Language 40
4.2.1 Weight status sensitivity 40
4.2.2 Weight status terminology 43
4.2.3 Language style and terminology 49
4.3 Message framing 53
4.3.1 Gain frame 53
4.3.2 Choice 55
4.3.3 Humour and shock tactics 55
4.3.4 Systematic reviews 56
4.4 Attitudes to receiving more information on diet 58
4.5 Combined messages 60
4.6 Conflicting messages 63
4.7 Health consequences 66
4.8 Review only themes 69
5 Discussion 76
5.1 Key points 76
5.2 Limitations 79
5.3 Evidence gaps 82
6 Conclusions 83
7 Reference list 85
8 Appendix A: Modifiable behaviours 88
9 Appendix B: Sample search strategy 91
10 Appendix C: Sifting protocol 93
11 Appendix D: List of excluded studies 97
12 Appendix E: Evidence tables 101

Glossary

Content analysis: is a method for studying the content of communication. Manifest content analysis refers to analysing what a person has definitely written or said. This is opposed to analysing latent content, which refers to what a person intended to say or write.

Dependability: In a qualitative context, dependability describes how replicable or repeatable the findings are; accounting for the changing context in which qualitative research occurs. It is the qualitative equivalent of the quantitative term, reliability. For example, would similar views and conclusions be reported if the same study was re-run?

Ethnography: is a qualitative research design aimed at exploring cultural phenomena.

Gain frame: phrasing a statement that describes an outcome or behavioural alternative to emphasise its benefits in terms of its positive features. For example, a physical activity message might read, “children enjoy running around and burning off energy helps them concentrate at school and sleep well at night”.

Grounded theory: is a systematic social science methodology. Rather than beginning with a hypothesis or theory, it seeks to generate one through a staged process. First data are collected; key points are then marked with a series of codes; codes are grouped into similar concepts; concepts and then grouped into categories. The categories form the basis for creating a theory or hypothesis. Hence, the theory is built from the data upwards.

Loss frame: phrasing a statement that describes an outcome or behavioural alternative in terms of its costs. For example, a message about children might read, “one of us will die of heart disease or diabetes when we’re older because of the foods our parents let us eat now”.

Manifest content analysis: see content analysis.

Message framing: the way that an equivalent message is phrased in terms of its benefits (see gain frame) or costs (see loss frame). The message framing does not alter the meaning of the message.

Thematic analysis: is an analysis approach common in qualitative research. It concerns identifying, examining, and recording patterns or "themes" within data. It is often performed through a process of coding in 6 phases to create established and meaningful patterns. These phases are familiarisation with data, generating initial codes, searching for themes among codes, reviewing themes, defining and naming themes, and producing a final report. It is synonymous with thematic content analysis.

Transferability: refers to the degree to which the results of qualitative research can be generalised or transferred to other contexts or settings.

Transtheoretical model (TTM): is a conceptual model of behaviour change including a core concept of “stages of change”, which are ordered categories along a continuum of motivational readiness to change a behaviour.

1 Executive Summary

1.1 Introduction

This evidence review aims to support a partial update of the existing guideline on obesity (NICE clinical guideline 43 2006) focussing on section 1.1.1. The evidence review has two parts. Review 1, a systematic review of systematic reviews, assesses the effectiveness of strategies that may help people maintain a healthy weight and prevent excess weight gain. This is described in a separate report. Review 2, the focus of this report, supported Review 1 by addressing the following related research question:

- What are the views of people in the UK about the acceptability of messages about individually modifiable behaviours to help maintain a healthy weight or prevent excess weight gain, for example regarding message framing and language?

1.2 Methods

Review methodology was based on the methods and processes outlined in the NICE manual: Methods for development of NICE public health guidance (third edition, 2012).

Briefly, the steps in this review were:

- Identifying relevant UK primary qualitative research studies by systematic searches of electronic literature databases, including grey literature and supplemental searches
- Identifying relevant systematic reviews from systematic searches of electronic literature databases carried out for review 1
- Selecting relevant studies against standardised inclusion criteria
- Extracting data on study characteristics and assessing the quality and relevance of the included studies
- Using thematic analysis to code qualitative data into emergent patterns (or conceptual “themes”) relevant to the acceptability of messages about maintaining a healthy weight or preventing excess weight gain
- Narratively summarising findings and drafting evidence statements

Full details are described in sections 3.1 to 3.5 of this report.

1.3 Results

Seven UK primary studies (Croker *et al.* 2009 [++], Department of Health 2008 [+], Gray *et al.* 2008 [++], Marno 2011 [+], Newlove and Crawshaw 2009 [+], NHS Somerset 2011 [+], Tailor and Ogden 2009 [+]) and 2 non-UK systematic reviews (Boylan *et al.* 2012 [+], Latimer *et al.* 2010 [+]) were included in this review.

The studies were not a homogenous group. There was large variation in study research questions, analysis, study relevance, study populations (including individual weight status of participants), and variable reporting of underlying methodology to inform quality assessment. See summary Table 1 and Table 2 as well as Evidence Tables in section 12 for further details.

From the 7 UK studies, this review identified 6 emergent conceptual themes to consider when developing acceptable messages about maintaining a healthy weight or preventing weight gain. They include:

- language (including weight status terminology, tone, and general style)
- message framing
- attitudes to receiving more information
- combined messages
- conflicting messages
- health consequences

In addition, 1 non-UK systematic review included suggestions for the general content of healthy weight guidelines (Boylan *et al.* 2012 [+]) and both provided evidence in favour of message tailoring in some circumstances (Boylan *et al.* 2012 [+], Latimer *et al.* 2010 [+]), a theme not identified in the 7 UK studies reviewed.

These themes are summarised into 11 evidence statements to inform the drafting of messages about maintaining a healthy weight or preventing excess weight gain. The salience of each conceptual theme should be considered in the specific communication context in which they will be applied.

1.4 Evidence statements

Evidence Statement 1: Underlying characteristics

Evidence from 7 UK primary studies (2 [++][1,2], 5 [+][,3,4,5,6,7]) and 2 (+) non-UK systematic reviews[8,9] provided limited insight into how views on message acceptability might vary by age, gender, or personal weight status.

Two studies[1,8] briefly commented there might be variation in the acceptability of messages by age but neither explored this in any depth. For example, 1 (++) study[1] reported younger participants in particular recognised the term "obese" as a clinical or medical term that did not necessarily equate with the negative perceptions usually associated with the term, but opinion was divided among older people.

Applicability to the UK: The primary studies[1,2,3,4,5,6,7] are directly applicable to the UK. One systematic review[8] included predominantly non-UK studies potentially limiting its UK applicability. The second review [2] did not report the country in which included studies took place, so its UK applicability is unclear.

[1] Gray *et al.* 2008 (++)
[2] Croker *et al.* 2009 (++)
[3] NHS Somerset 2011 (+)
[4] Marno 2011 (+)
[5] Tailor and Ogden 2009 (+)
[6] Department of Health 2008 (+)
[7] Newlove and Crawshaw 2009 (+)
[8] Boylan *et al.* 2012 (+)
[9] Latimer *et al.* 2010 (+)

Evidence Statement 2: Language (weight status sensitivity)

Evidence from 3 UK primary studies (1 [++][1], [+][2,3]) indicated communicating weight status can be a sensitive issue socially[1] and for health professionals[2,3]. For example, some overweight or obese adults reacted negatively to being described as 'fat' or 'obese' socially because the terms were perceived to be associated with laziness or greed[1]. Health professionals also reported that telling parents their child was overweight might be taken as an insult[2]. Another study indicated health professionals might not be able to rely on a single "one size fits all" approach to discussing excess weight with people because individuals react differently to different terminology[1] (See Evidence Statement 3).

Applicability to the UK: All 3 studies are directly applicable to the UK.

[1] Gray *et al.* 2008 (++)
[2] NHS Somerset 2011 (+)
[3] Marno 2011 (+)

Evidence Statement 3: Language (weight status terminology)

Evidence from 4 UK primary studies (1 [++][1], 3 [+][2,3,4]) and 1 (+) non-UK systematic review[5] indicated that specific terminology to describe weight status can affect the acceptability of messages about maintaining a healthy weight or preventing excess weight gain.

Terms described as broadly unacceptable included obesity[2,3,5] , obese[1], fat[1], excessive fat[1] and fatness[5]. Acceptable terms included overweight, heavy, large, high BMI, unhealthy BMI and excessive weight[1]. Some acceptable terms (such as overweight and large) were not perceived to be likely to motivate weight loss[1]. Two studies provided inconsistent views on whether the term "weight" was acceptable[2,5] . Using the phrase "your weight may be damaging your health" influenced the emotional impact and comprehension of consequences compared with being told, "you are obese" [4].

Applicability to the UK: Only the results of the systematic review[5] are not directly applicable to the UK as it contained predominantly non-UK research.

[1] Gray *et al.* 2008 (++)
[2] Department of Health 2008 (+)
[3] Marno 2011 (+)
[4] Tailor and Ogden 2009 (+)
[5] Boylan *et al.* 2012 (+)

Evidence Statement 4: Language style and terminology

Language style

Evidence from 2 (+) UK primary studies[1, 2] suggested that telling people what to do could provoke a negative reaction.

One (+) study[1] suggested communication about childhood weight (targeting overweight families) needed to be clear, simple and non-judgemental. Parents required specific, supportive messages that empower them to make changes that were applicable, actionable, easily adaptable to normal family life, and presented in a down-to-earth way[1].

One (+) non-UK systematic review found people who were overweight or obese reported feeling stigmatised by the simplicity of guideline messages as they do not recognise the complexity of obesity[3].

Specific terminology

Two studies[1,3] suggested positive, empathic, suggestive terms (e.g. “we” rather than “us” or “you”; “could happen” rather than “will happen”; “choose occasionally”; “could”, and “how about?”) may be acceptable in communication with overweight families[1] and weight related guideline consumers[3]. The terms “health” and “balance” can be ambiguous and interpreted differently by message recipients[3].

Applicability to the UK: Only the results of the systematic review[3] are not directly applicable to the UK as it contained predominantly non-UK research.

[1] Department of Health 2008 (+)
[2] Newlove and Crawshaw 2009 (+)
[3] Boylan *et al.* 2012 (+)

Evidence Statement 5: Message framing

Evidence from 3 (+) UK primary studies[1,2,3] and 1 (+) systematic review[4] provided consistent views that positive, gain-framed messages were acceptable.

For physical activity messages only focussing on positive, non-health-related benefits, such as creating happy family memories, were acceptable to parents of overweight and obese families (ethnicity not specified) but parents specifically from Bangladeshi, Pakistani and Black African families found them too soft and emotional[2]. These parents preferred messages emphasising benefits to their children's learning, education and future success[2].

For health messages generally, some long term unemployed men thought using shock tactics could be effective for stimulating behaviour change, a stop smoking example was used, but others viewed them as "emotional blackmail" or "propaganda"[3]. These men indicated humorous health messages could be memorable but risked being stigmatising[3]. Three studies indicated telling people what to do in relation to their diet, physical activity or body weight was unacceptable and messages seen as forcing a particular behaviour are likely to be resisted[1,2,3].

Applicability to the UK: results from the primary literature[1,2,3] are applicable to the UK. The review[4] did not report what country included studies were from, so its applicability is unclear.

[1] NHS Somerset 2011 (+)
[2] Department of Health 2008 (+)
[3] Newlove and Crawshaw 2009 (+)
[4] Latimer *et al.* 2010 (+)

Evidence Statement 6: Attitudes to receiving more information on diet

Evidence from 1 (++) UK focus group study[1] indicated some mothers of 8 to 11 year olds felt they were already bombarded with too much information and advice on parenting, and that information on weighing and measuring portions would not be helpful as this was not something they would be prepared to do and may ignore this advice. The study included 14 mothers, 12 of whom were white British (weight status not reported).Evidence from 1 (+) non-UK systematic review[2] identified studies supporting this observation; adults and children suggested they were tired of hearing about what foods they should eat. The study concluded that overloading individuals with advice might lead to rejection of guidelines rather than adoption of new information[2].

Applicability to the UK: The results from the primary literature[1] are applicable to the UK. The results of the review[2] are potentially less applicable as they contain predominantly non-UK research and views.

[1] Croker *et al.* 2009 (++)
[2] Boylan *et al.* 2012 (+)

Evidence Statement 7: Combining messages for diet and physical activity

Evidence from 1 (+) UK study[1] showed that when aspects of diet and physical activity are combined in the same message diet messages dominate and the activity component is ignored, regardless of the order in which they are presented.

Combined messages indicating a "balance" of diet and physical activity can be misinterpreted. Combined messages also have the potential to reinforce the belief that "it doesn't matter what children eat as long as they are active", serving to perpetuate unhealthy diets[1]. This was supported by a (+) systematic review[2] that also identified the belief that if food consumption was low, physical activity was not needed[2].

Applicability to the UK: The primary study[1] was directly applicable although it was primarily views of parents from overweight or obese families, potentially limiting transferability to other groups. The systematic review[2] may be less applicable as it contained predominantly non-UK research and views.

[1] Department of Health 2008 (+)
[2] Boylan *et al.* 2012 (+)

Evidence Statement 8: Conflicting messages

Evidence from 2 UK (+) focus group studies[1,2] and 1 (+) systematic review[3] indicated health messages are not viewed or comprehended in isolation. Conflicting messages from non-health sources (mainstream media, relatives and wider social networks)[1,2] abound with nutritional messages in health promotion and commercial sources being perceived by consumers as conflicting. This conflict potentially reduces the credibility of health promotion messages. One systematic review[3] suggested that those responsible for developing weight-related guidelines could engage with communication or media professionals to assist accurate and effective communication of messages, thereby improving consumer comprehension of such guidelines.

Applicability to the UK: The results from the primary studies[1,2] are applicable to the UK. The results of the systematic review[3] are potentially less applicable as they contain predominantly non-UK research and views.

[1] NHS Somerset 2011 (+)
[2] Marno 2011 (+)
[3] Boylan *et al.* 2012 (+)

Evidence Statement 9: Health consequences

Evidence from 1 (+) UK study[1] showed parents preferred messages that explained how the long term health consequences of an unhealthy diet (death and disease) outweighed the short term costs around changing their child's diet (e.g. the fuss of denying them unhealthy snacks).

Using phrases such as 'killing with kindness' that shocked parents with the long-term negative health consequences of failing to change diet related behaviour was motivating when parents understood it mean long-term, cumulative damage to children's health. Using "killing" on its own was seen as scaremongering by some. The study advised testing the exact wording of messages with representative focus groups before messages are used widely[1].

Applicability to the UK: The results are applicable to the UK although it was primarily views of parents from overweight or obese families, potentially limiting transferability to other populations.

[1] Department of Health 2008 (+)

Evidence Statement 10: General content

Evidence from 1 (+) systematic review[1] assessing adult and child reactions to weight related guidelines made the following summary suggestions relevant to content acceptability:

- guidelines can be confusing. Consumers need simple, clear, specific and realistic guidelines
- guideline consumers desired positive and suggestive terminologies; however, negative messages may be more persuasive
- flexible guidelines (acknowledging unhealthy behaviour occurs and allows room for it) may be needed to prevent endorsing a sense of failure if people cannot live up to them
- terminology plays an important role in an individual's understanding and acceptance of guidelines.

Some participants felt guidelines should be more specific about the types of food to eat and the amounts[1]. For example, specifying cups of vegetables or minutes of physical activity instead of less precise language around servings or sedentary behaviour. This appeared inconsistent with a (++) UK study[2] indicating UK mothers would not welcome diet guidelines involving measuring (or weighing) portion sizes for their children in Evidence Statement 6.

Applicability to the UK: The review included 46 quantitative or qualitative studies. Just 3 were based in the UK potentially limiting applicability to the UK. For example, using cups as a measure of food volume is more common in the US than the UK.

[1] Boylan *et al.* 2012 (+)
[2] Croker *et al.* 2009 (++)

Evidence Statement 11: Message tailoring

Evidence from 2 (+) systematic reviews[1,2] indicated message tailoring may increase the acceptability[1] and or effectiveness[2] of healthy weight communications.

The perception of weight related guideline recommendations differed by age, gender, weight and socioeconomic status[1], furthermore, religious practices, traditional food preparation and preferences may also influence perceptions. One review on physical activity messages only[2], concluded strong evidence to support definitive recommendations for message content and structure was lacking. However, there was evidence that tailoring messages to individuals' stage of change (transtheoretical model of behaviour change) may have some advantages over generic messages. It suggested that when messages can be tailored easily and with little additional financial cost, tailoring should be considered[2]. It was suggested that the internet and mobile phones might make mass tailoring more achievable and limited tailoring resources could be focussed on groups most in need[1], there is no reason to suspect this should be different for physical activity.

Applicability to the UK: One review[1] included mainly non-UK studies potentially limiting applicability to the UK whereas the second[2] did not report country of origin of the included studies so applicability was unclear.

[1] Boylan *et al.* 2012 (+)
[2] Latimer *et al.* 2010 (+)

2 Introduction

2.1 Context

NICE Clinical Guideline (CG43) “Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children” was reviewed in 2011 (NICE 2011). This review noted that new evidence may be available on how children and adults can maintain a healthy weight or prevent excess weight gain. For example, it may be possible to provide more specific advice on weight monitoring, screen time or sugar-sweetened drinks.

In addition, NICE public health guidance on working with local communities to prevent obesity (NICE 2012) also raised issues about the way messages and advice about weight are communicated, particularly the tone and language. The current evidence review was carried out to support reconsideration of section 1.1.1 of the existing obesity guidance in this light.

2.2 Aims and objectives

This evidence review has two parts. The first assessed the association between modifiable diet and physical activity components, and associated behaviours, which may support children and adults to maintain a healthy weight or prevent excess weight gain.

The second component, the focus of this report, reviews the acceptability of messages about maintaining a healthy weight in children and adults in the UK.

Review 1 is the focus of the work with review 2 comprising a smaller piece of work.

2.3 Research questions

The overall evidence review aims to address the following questions:

1. What individually modifiable behaviours may help children and young people to maintain a healthy weight or prevent excess weight gain?
2. What individually modifiable behaviours may help adults to maintain a healthy weight or prevent excess weight gain?

3. What are the most effective ways to communicate information to children, young people and adults about individually modifiable behaviours to help maintain a healthy weight or prevent excess weight gain?

Questions 1 and 2 are covered in the review 1 report. Question 3 is addressed in this report.

3 Methods

Review methodology was based on the methods and processes outlined in the NICE manual: Methods for development of NICE public health guidance (third edition, 2012).

Briefly, the steps in this review were:

- Identifying relevant UK primary research studies by systematic searches of electronic literature databases, including grey literature and supplemental searches
- Identifying relevant systematic reviews from systematic searches of electronic literature databases carried out for review 1
- Selecting relevant studies against inclusion criteria
- Extracting data on study characteristics and assessing the quality and relevance of the included studies
- Using thematic analysis to code qualitative data from included studies into emergent patterns (or conceptual “themes”) relevant to the acceptability of messages about maintaining a healthy weight or preventing excess weight gain
- Summarising findings and drafting evidence statements

Further details are described in sections 3.1 to 3.5.

3.1 Scope of the review

The initial research question was broad and could encompass a wide range of domains of communication. For example, mode of message delivery, specific message content, message structure, message format, how the message is displayed visually, use of graphics, message exposure and other dimensions.

Similarly effectiveness could be judged in a number of ways from the more subjective end of the scale (perceived acceptability, increasing awareness of a message, increasing knowledge, message retention) to the more objective assessments (did the communication lead to behaviour change or changes in weight related outcomes). Narrowing of the focus of this review was carried out after initiation of Review 1 in consultation with the NICE team.

Based on discussions with NICE, the focus was identified as being the acceptability of messages about individually modifiable behaviours for healthy weight maintenance, that is, actions for which a person takes individual responsibility for rather than something that is done to them. This was so Review 2 could be directly supportive of Review 1. As such, the review question was refined to:

- What are the views of people in the UK about the acceptability of messages about individually modifiable behaviours (i.e. individual responsibility) to help maintain a healthy weight or prevent excess weight gain, for example regarding message framing and language?

The scope of the review targeted UK relevant evidence on acceptability based on the assumption that message acceptability is likely to vary significantly between different countries, and on a local or regional basis. The following areas were highlighted as of particular interest:

- qualitative research relating to individuals' perceptions of messages about individually modifiable behaviours for healthy weight maintenance. That is, actions for which a person takes individual responsibility.
- the impact of framing and language used in the messages, for example:
  - Whether messages are "gain framed" or "loss framed"
  - Whether messages relate to increasing or decreasing a behaviour
  - Whether the terms weight, overweight, obesity are mentioned

The list of modifiable behaviours covered was the same as in Review 1 and are presented in Appendix A for reference, see section 8.

The literature search was for relevant qualitative studies performed in the UK. Searches were limited to retrieve only articles published in full text in English. As weight maintenance messages and acceptability may have changed over time as social and cultural contexts change, the search only covered papers published in the past 13 years, since 2000.

3.2 Systematic searches

3.2.1 Stage 1 Bibliographic database searching

The following bibliographic databases were searched to identify relevant primary studies.

- MEDLINE and MEDLINE In Process (Ovid)
- Cochrane Central Register of Controlled Trials (CENTRAL)
- Applied Social Sciences Index and Abstracts (ASSIA) (Proquet)
- Social Policy and Practice Database (Ovid)
- PsycINFO (Ovid)
- EPPI databases: Bibliomap, TRoPHI (Trials Register of Promoting Health Interventions)

The Medline search strategy was translated for the other databases and adapted to take into account database size, coverage, available search facilities and available indexing terms. The proposed MEDLINE search strategy is included in Appendix B section 9.

3.2.2 Stage 2 Grey literature searching

The grey literature search focused on searching the following key UK websites:

- Department of Health
- Public Health England
- National Obesity Observatory
- NICE Evidence

Supplementary search techniques included a focused Google search to identify other potentially relevant studies not published by national bodies, organisations or in the journal literature.

3.2.3 Identification of relevant systematic reviews

Systematic review level evidence (UK and non-UK, with no quantitative or qualitative study type filter restrictions) was systematically searched in Review 1 using a 3-stage approach (see Review 1 methods for full description):

- a broad initial search for systematic reviews to cover all individually modifiable behaviours in the a priori list
- a more targeted search for systematic reviews to cover a selected subset of the behaviours for which relevant systematic reviews were not identified in the initial search
- a targeted search for primary research on a small subset of selected behaviours in the a priori list for which no relevant systematic reviews were identified.

Systematic reviews deemed potentially relevant to Review 2 were tagged in a Reference Manager database (RefMan) during Review 1 title/abstract sifting.

After discussion with NICE it was agreed these systematic reviews would be screened for potential inclusion in Review 2 using the same screening criteria used to assess the UK primary literature (see Appendix C section 10). The rationale was that the reviews might provide added insight and context to complement the findings of the UK primary studies.

It was agreed the review level evidence would function as a smaller supporting role to the substantive focus on primary research during the review write up. The themes identified from UK primary literature alone, for instance, could be used as a basis for comparing and contrasting top-level conclusions/themes contained in the systematic reviews, in the form of a narrative summary or discussion.

It is important to note that there was no targeted search specifically for qualitative systematic reviews, or grey literature searching for systematic reviews. The reviews were identified solely from the broad and wide-ranging Review 1 search strategy

targeting systematic reviews. As such, we cannot be sure we identified all relevant systematic reviews during this process.

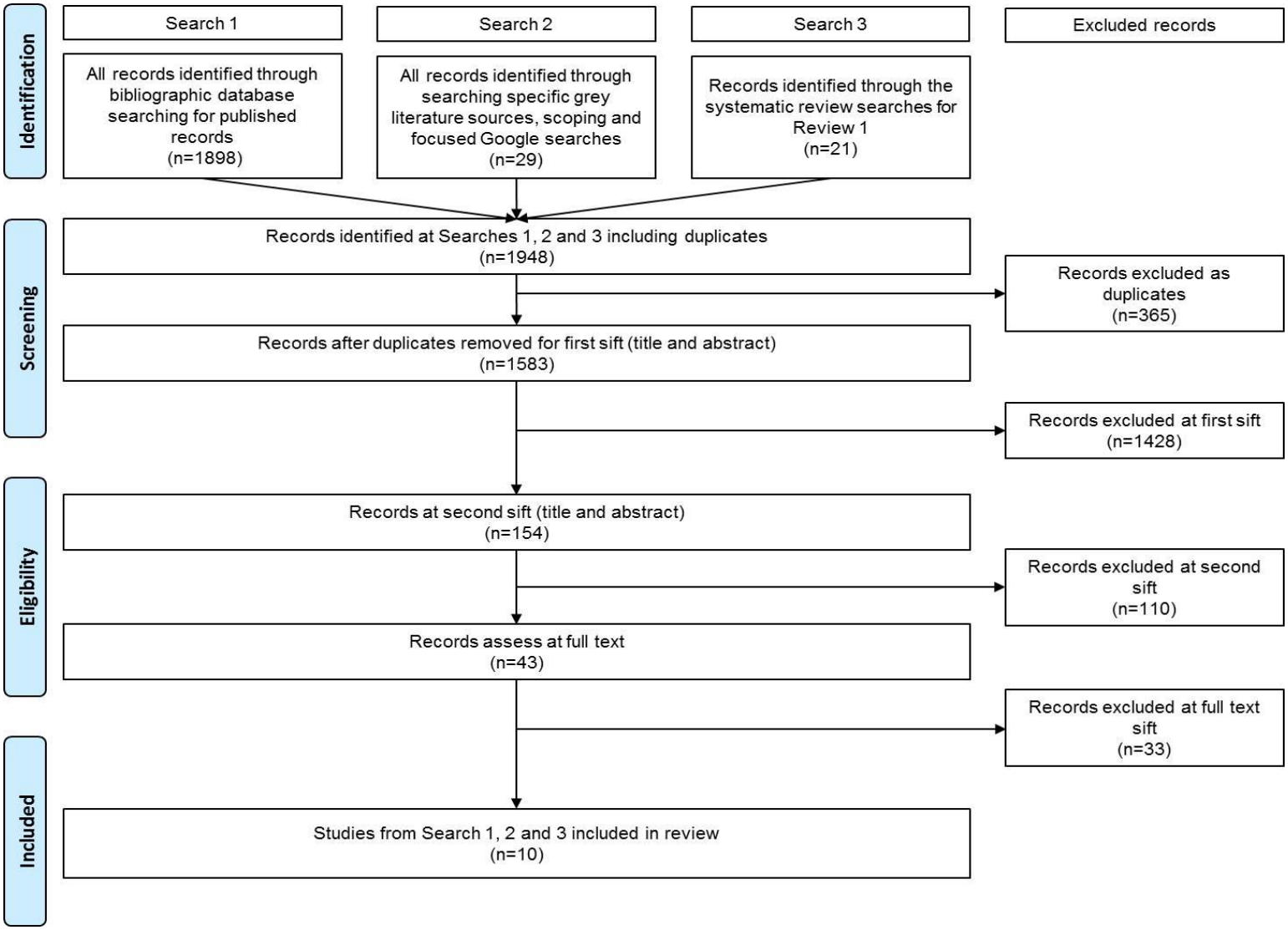
3.3 Selecting studies for inclusion

Studies were evaluated for inclusion against criteria listed in the sifting protocol (Appendix C section 10). Primary studies were included if they gathered views of people in the UK about the acceptability of messages about individually modifiable behaviours to help maintain a healthy weight or prevent excess weight gain, for example, concerning message framing and language.

The focus of study selection was to identify literature that included views from unselected members of the general population, that is, a mix of healthy weight, underweight, overweight and or obese. Studies that included only individuals who are overweight or obese were not the focus of the review at the outset. However, the results showed there were very few studies fulfilling these criteria, so studies recruiting only obese or overweight groups were included to reflect the best available evidence on the topic.

See Figure 1 for the flow of studies from search to final inclusion. In total, 1,583 unique studies were identified during all phases of the literature search. Of these, 10 were included in the review comprising 8 primary UK studies and 2 relevant non-UK based systematic reviews. The work of 1 primary study (Department of Health 2008) formed the foundation of a second related publication (Swanton 2009). Swanton 2009 provided some minor added insight otherwise presented identical findings as the Department of Health 2008 . Results data from both were included to capture the full information, but only 1 was quality appraised as the underlying methods were clearly the same (see section 3.5 for further details).

Figure 1: PRISMA diagram for qualitative review search and sift strategy



3.3.1 First pass appraisal

Evidence identified in the search was filtered at the title/abstract level by an information specialist to remove any clearly non-relevant material. Studies were excluded based on the following:

- Clearly non-relevant topics (i.e. question not relevant)
- Non-relevant population (i.e. not UK study)
- Non-relevant study design/type (e.g. letters, animal studies)

This stage of screening acted as a “coarse filter” and erred on the side of inclusion to avoid exclusion of studies that may be relevant. Ten percent of the citations identified were double sifted by a second information specialist and reflected good inter-rater agreement (kappa=0.66). Any uncertainties regarding inclusion/exclusion were resolved by discussion with a second information specialist.

3.3.2 Second pass appraisal

A Health Research Analyst carried out a more detailed assessment of the studies based on title/abstract to select relevant studies for full text appraisal. The reasons for exclusions recorded were:

- Wrong question (e.g. study not addressing message acceptability, such as but not limited to, message framing or language; message being assessed not aimed at individuals)
- Wrong population (e.g. non-UK population, relating to messages targeting infants who have not been weaned)
- Wrong study design/type (e.g. not a qualitative study)
- Wong exposure/intervention (e.g. messages related to programmes or services to treat people who are obese or overweight; management of medical conditions related to weight status; environmental factors beyond people’s control, such as provision of cycle paths).

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Uncertainties regarding inclusion or exclusion were resolved by discussion with a second analyst. Titles and abstracts of 20 studies were double screened resulting in good inter-rater agreement (kappa=1.0).

3.3.3 Full text appraisal

Full text papers were obtained and appraised by a Health Research Analyst against inclusion criteria laid out in Appendix C section 10. The reasons for exclusion recorded were the same as the second appraisal.

All queries regarding inclusion or exclusion were resolved by discussion with a second analyst. A second analyst double appraised twenty studies achieving good inter-rater agreement (kappa=0.74). A list of studies excluded at full text, grouped by reason for exclusion, can be found in Appendix D section 0.

3.4 Data extraction and quality appraisal

Study data extraction and quality appraisal was carried out for all studies selected at full text using qualitative study quality checklists and evidence table templates as provided in the NICE methods manual (NICE 2012). The overall quality ratings are as follows:

[++] All or most of the NICE checklist criteria have been fulfilled; where they have not been fulfilled, the conclusions are very unlikely to alter.

[+] Some of the checklist criteria have been fulfilled, where they have not been fulfilled, or not adequately described, the conclusions are unlikely to alter.

[-] Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

As the number of included studies was small (7 unique UK primary studies and 2 non-UK reviews) all were double quality appraised by a second analyst with disagreements resolved by consensus discussion.

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The above criteria assessed the influence of unwanted methodological bias. A second rating process took place assessing relevance based on methodology described in Rees *et al.* 2011 and aimed to assess the usefulness of the study findings within our review. It was based on whether the data was rich (depth and breadth of relevant findings), relevant to the UK, and relevant to the review question on message acceptability. Relevance assessment was completed at the same time as the quality assessment of bias using a single combined form.

3.5 Thematic analysis and synthesis

The focus of this work was on synthesising UK evidence that could inform the construction of acceptable messages about maintaining a healthy weight or preventing excess weight gain in terms of content aspects such as language and message framing.

Data extraction and analysis sought to identify newly emergent themes from the available literature.

3.5.1 Process of identifying themes

Using manifest content analysis 2 research analysts worked to identify themes in parallel reviewing half of the literature each, comparing and discussing emergent themes as they went to resolve unclear or overlapping themes. Emergent themes were logged in a communal theme tracker database, with brief description outlining each conceptual theme.

The method of data extraction and synthesis into conceptual themes followed the following process based on principles of grounded theory.

All included literature was first read to gain familiarity with the data. Line by line thematic coding was then employed to identify emergent patterns of text “themes” relating to discreet aspects of communication acceptability. Emergent theme titles were noted in a theme tracker database alongside a brief description to log, develop and track emergent patterns.

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As opposed to data from the results section only, data from all sections of the studies was considered eligible for coding; so long as the text was clearly linked to or quoting the original data (e.g. from user or provider interview, focus groups or surveys), rather than speculative or tangential discussion.

Details of the text contributing to each emergent theme, including an illustrative quote where possible, were extracted into evidence tables. Note: the evidence tables presented in Appendix E, section 12, are a shortened version of these, containing just the theme titles to aid presentation and readability.

The data was initially extracted as order 1 or order 2 data based on methodological descriptions in Britten *et al.* 2002. In brief, order 1 data came from participant level information -likely to be found in the main results section describing what was found from focus groups or interviews. Order 2 data contained added interpretation from the study authors' themselves, such as the main conclusions of the study or added nuances apparent from the authors' synthesis of the data - likely to be in the discussion or conclusion sections. Second order data was included as the authors of the study are often closest to the data and can add significant insight and synthesis when describing their data that would otherwise be missed if extraction focused solely on order 1 findings.

3.5.2 Synthesis

The data synthesis utilised a broad meta-ethnography approach as described in Britten *et al.* 2002.

All the emergent themes (based on order 1 and order 2 data) and their short descriptions were recorded in a summary table and reviewed by 1 analyst to identify overlaps, synergies or commonalities. At this stage related themes were collapsed into each other, resulting in the final list of themes identified (see section 4). For example, "children's future success" and "flexibility and choice" were initially identified as a unique themes but were later both collapsed into the theme "message framing".

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The non-UK reviews followed the same process as the UK primary literature outlined above. Only review level conclusions and data (order 2) were extracted from these reviews. That is to say, we were focussing on the review level summary and synthesised data presented in the reviews, rather than trying to disentangle, or reverse engineer individual study findings from the existing synthesis. The primary studies included in the reviews were not reviewed at source.

3.5.3 Data extraction of two related department of health publications

Of special note was the data extraction relating to the Department of Health consumer insight summary report (Department of Health 2008). The consumer insight summary informed a second related publication “A toolkit for developing local strategies” (Swanton 2008). This sought to summarise best practice guidance and contained a very relevant section on communication (Tool D10), based on the findings of consumer insight study above. For the purposes of our review, data was first extracted from the consumer insight report as it contained the more detailed findings and methodological information. Subsequently, the toolkit text was reviewed for any additional insight or interpretation of the same data. Results data from both sources were extracted into the same evidence table with data from the toolkit prefixed with “toolkit” to identify the source. In the final evidence tables (Appendix E Section 12), these have been merged and the prefix removed, as only the theme titles are presented for visual clarity.

3.5.4 Data presentation

Results reporting follows the following structure:

- Conceptual theme heading
- Theme description
- Number and quality of studies contributing to the theme
- Narrative summary
- Evidence statement

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Qualitative data relating to communication acceptability was initially described using a brief narrative for each individual study grouped by emergent conceptual theme (not displayed for presentation purposes). These descriptions were then used as the foundation for writing more summarised and synthesised narrative summaries, which subsequently acted as the basis for the evidence statements.

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4 Results

Seven UK primary studies (Croker *et al.* 2009 [++], Department of Health 2008 [+], Gray *et al.* 2008 [++], Marno 2011 [+], Newlove and Crawshaw 2009 [+], NHS Somerset 2011 [+], Tailor and Ogden 2009 [+]) and 2 non-UK systematic reviews (Boylan *et al.* 2012 [+], Latimer *et al.* 2010 [+]) were included in this review.

The following 6 emergent conceptual themes were identified from the UK primary literature:

- Language (specific terminology and style)
- Message framing
- Attitude to receiving more information
- Combined messages
- Conflicting messages
- Health consequences

All but 1 of these themes (health consequences) was also identified in at least 1 of the 2 systematic reviews. The systematic reviews also contained 2 themes that were not explicitly identified in any of the UK primary literature reviewed:

- Message Tailoring
- General content of guidelines

Key characteristics of the included studies and the themes they contributed to are summarised in Table 1 and Table 2. The included studies were not a homogenous group. There was large variation in individual study research questions, analysis, study relevance, study populations, and variable reporting of underlying methodology to inform quality assessment. More detailed information describing study aims, qualitative methods, and limitations can be found in the Evidence Tables, Appendix E section 12.

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Table 1 Summary of UK primary research characteristics and themes

Characteristics	Department of Health 2008	Newlove and Crawshaw 2009	NHS Somerset 2011	Marno 2011	Gray *et al.* 2008	Croker *et al.* 2009	Tailor and Ogden 2008
Quality score	+	+	+	+	++	++	+
Relevance rating	High	Moderate	Moderate	Moderate	High	Moderate	Low
Sample	48 to 60 people from largely obese/ overweight families	28 unemployed men (mean age 36; range 22 to 54) of predominantly white British descent (weight status NR)	21 parents or health professionals, plus unknown number of young people (weight status NR)	40 health professionals, parents, young people or those working with young people (weight status NR).	34 overweight or obese men and women in their mid-to-late 30s and 50s.	14 volunteer mothers (weight status NR) of 8-11 year olds.	449 adults aged over 18 (66.1% female, mean age 43.3; 57.4% white, mean BMI 25.7kg/m^2, BMI <30 80.8%)
Data collection	12 group discussions	Semi-structured focus groups	4 focus groups and 2 one-to-one interviews	5 focus groups	Individual face-to-face or telephone interviews	4 focus groups	Questionnaire
Message context	Parents views on communicating diet and physical activity	Attitudes to health messages	Communication between health practitioners, wider sources and families.	Communication between health professionals and families	Views on appropriate weight status terminology used socially or by health professionals	Mothers' views on portion size for children	Patients beliefs about language used by GPs

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Characteristics	Department of Health 2008	Newlove and Crawshaw 2009	NHS Somerset 2011	Marno 2011	Gray *et al.* 2008	Croker *et al.* 2009	Tailor and Ogden 2008
Themes							
Language	Y	Y	Y	Y	Y	N	Y
Message framing	Y	Y	Y	N	N	N	N
Attitude to receiving more information	N	N	N	N	N	Y	N
Combined messages	Y	N	N	N	N	N	N
Conflicting messages	N	N	Y	Y	N	N	N
Health consequences	Y	N	N	N	N	N	N

BMI, body mass index; N, no - did not contribute to theme; NR, not reported; Y, yes - contributed to theme.

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Table 2 Summary of non-UK systematic review characteristics and themes

Characteristics	**Boylan *et al.* 2012**	**Latimer *et al.* 2010**
Quality score	+	+
Relevance rating	Moderate	Low
Sample	Majority adult, female US residents with weight status NR or unselected	Healthy adults aged 18 to 65 years with weight status NR
Data collection	n=46 qualitative or quantitative studies	n=22 studies (RCTs, quasi-experimental, 1 pre-post)
Message context	Adult, children and young people's reactions to weight related guidelines, mainly diet guidelines	Effectiveness of 3 approaches to constructing physical activity messages
Themes		
Language	Y	N
Message framing	Y	Y
Attitude to receiving more information	Y	N
Combined messages	Y	N
Conflicting messages	Y	N
Health consequences	N	N
Message Tailoring	Y	Y
Content	Y	N

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4.1 Overview of included studies

4.1.1 Quality Assessment

Two UK primary studies were rated (++) and 5 rated (+) indicating studies were influenced by a degree of unwanted bias but the risk was assessed as unlikely (+) or very unlikely (++) to change the overall conclusions of the individual studies.

Common limitations contributing to ratings of (+) as opposed to (++) were insufficient reporting on the qualitative methods, not describing how data were synthesised into themes or conclusions, and/or inadequate description of the participant characteristics (age, gender, weight status, educational attainment etc.). Consequently, the characteristics that set the participants views in context were often missing or poorly described. This limited our ability to assess the influence of the context on the views expressed, and to assess how transferable views might be to other groups and situations.

Four of the studies were reports based on underlying qualitative research (Department of Health 2008, Newlove and Crawshaw 2009, Marno 2011 and NHS Somerset 2011) rather than peer reviewed articles published in academic journals. Reports that have not undergone the peer review process are potentially more at risk of biases and potentially have less dependability and transferability compared with academically published material.

4.1.2 Study population

4.1.2.1 Age and gender

The views of children and young people were largely absent from the primary level evidence reviewed. Two studies briefly indicated there might be variation in the acceptability of messages by age but neither explored these in any depth. Boylan *et al.* 2012 [+], a systematic review, briefly reported differences in the perception of weight related recommendations and reasons for making food choices by gender, age, weight and socioeconomic status. For example, they stated older individuals were more likely to make choices based on

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health reasons, while younger individuals were more concerned with knowledge, prices and time. Gray *et al.* 2008 (++) on the other hand reported a recognition particularly among younger participants that "obese" was a clinical or medical term that did not necessarily equate with the negative popular perceptions usually associated with the term. Opinion was divided among older people.

There was also no insightful discussion of differences or similarities between the views of male and females. Gender differences were mentioned briefly in one study (Gray *et al.* 2008 [++]) .This reported term ‘fat’ was viewed by some people, particularly women, as being too personal or too judgemental.

Consequently, the evidence provides little insight into how message acceptability may vary by age or gender to inform what kinds of messages are acceptable for different age groups or genders.

Of the 7 UK primary studies 4 included adults only. They included unemployed men with a mean age of 36 (Newlove and Crawshaw 2009); men and women in their mid to late 30s or 50s (Gray *et al.* 2008), adults over 18 (Tailor and Ogden 2008), and mothers of 8 to 11 year olds (Croker *et al.* 2009). Two studies recruited adults and young people (NHS Somerset 2011, Marno 2011) but did not specify age ranges for these participants or the number of young people recruited in both cases.

The remaining study reported recruiting overweight or obese families (Department of Health 2008) but appeared to focus on the views of the parents in these families. It was not clear if views from children were included in the summary suggestions or conclusions although the impression was they were not. For example, the study results included illustrative quotations, all of which were attributed to adults.

4.1.2.2 Weight status

It was difficult to assess variation of views on message acceptability by personal weight status of the sample population because the majority of

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included studies did not report weight status. Where reported, some studies recruited people who were overweight or obese, and others appeared to recruit a mixed weight population. Variation in views on acceptability by weight status was not discussed in detail by any. Consequently, there was little data to allow meaningful insight into variation in views on message acceptability by different personal weight status.

The weight status of the participants contributing views was not reported in 4 of the 7 primary UK studies. Of the 3 that did report information, 1 study (Department of Health 2008) reported parental views from obese or overweight families – families were described collectively by different social marketing cluster groups. However, it was not clear whether the parent(s) themselves were overweight or obese, whether it was their children who were obese or overweight, or both. A second study (Tailor and Ogden 2008) reported an average BMI of 25.7kg/m^2 for the study group with 80.8% of the sample having a BMI of less than 30 (the cut off for overweight/obese). This indicates the group was likely a mix of adults of healthy weight, overweight and a minority obese. The third study recruited only men and women who were overweight or obese (Gray *et al.* 2008).

4.1.3 Relevance assessment

Two studies were deemed highly relevant to this review as they directly addressed key aspects of communication acceptability (Department of Health 2008 and Gray *et al.* 2008).

The Department of Health 2008 study used message proposition testing to judge responses to example health messages whereas Gray *et al.* 2008 explored views on appropriate language to use when describing weight status. This study included discussion about terms that were socially acceptable and terminology that was acceptable if used by a health professional (Gray *et al.* 2008).

The 4 studies rated as moderately relevant contained useful and relevant information on message acceptability, but this was a small amount amongst a

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larger majority of irrelevant information. This was typically because the studies discussed issues around healthy weight very broadly and so only small aspects of the results or discussions were relevant to communication or message acceptability.

One study was rated as low relevance (Tailor and Ogden 2008) because it contributed only a small amount of information that was not broad or in depth. It also involved non-obese people reporting views on how they would react to being described as obese using different terminology. This method may not accurately reflect the views of people who are actually obese, which would arguably more informative and relevant to our review. Nonetheless, some of the non-obese participants may become obese at a later date so their views were included.

4.1.4 Contribution to the review

As can be seen in Table 1, some studies contributed to more than 1 theme and so will have had a larger influence and feature more frequently in this report (Department of Health 2008, Newlove and Crawshaw 2009, NHS Somerset 2011 and Marno 2011). Other studies contributed to just 1 theme each, so will only be mentioned once in the report (Gray *et al.* 2008, Croker *et al.* 2009, Tailor and Ogden 2008). The study by the Department of Health 2008 held particular prominence in our work as it was the broadest ranging research identified (contributing to 4 of the 6 emergent themes). Hence, the influence of this piece of research, including its biases and limitations, is significant within the context of our review.

4.1.5 Interpretation

It is important not to count the number of studies in each theme as an assessment of the strength of evidence presented. It is possible that the most insightful or important implication for use in a specific context may only have been identified in 1 study; what we have emphasised therefore is breadth. The salience of each conceptual theme should be considered in specific communication contexts.

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Evidence Statement 1: Underlying characteristics

Evidence from 7 UK primary studies (2 [++][1,2], 5 [+][,3,4,5,6,7]) and 2 (+) non-UK systematic reviews[8,9] provided limited insight into how views on message acceptability might vary by age, gender, or personal weight status.

Two studies[1,8] briefly commented there might be variation in the acceptability of messages by age but neither explored this in any depth. For example, 1 (++) study[1] reported younger participants in particular recognised the term "obese" as a clinical or medical term that did not necessarily equate with the negative perceptions usually associated with the term, but opinion was divided among older people.

Applicability to the UK: The primary studies[1,2,3,4,5,6,7] are directly applicable to the UK. One systematic review[8] included predominantly non-UK studies potentially limiting its UK applicability. The second review [2] did not report the country in which included studies took place, so its UK applicability is unclear.

[1] Gray *et al.* 2008 (++)
[2] Croker *et al.* 2009 (++)
[3] NHS Somerset 2011 (+)
[4] Marno 2011 (+)
[5] Tailor and Ogden 2009 (+)
[6] Department of Health 2008 (+)
[7] Newlove and Crawshaw 2009 (+)
[8] Boylan *et al.* 2012 (+)
[9] Latimer *et al.* 2010 (+)

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4.2 Language

Language was defined broadly and encompassed aspects of weight status terminology (e.g. whether use of the term obesity was acceptable) as well as more general language style (e.g. use of supportive terminology or colloquial phrases).

Evidence from 6 primary UK studies (Gray *et al.* 2008 [++], NHS Somerset 2011 [+], Tailor and Ogden 2009 [+], Marno 2011 [+], Department of Health 2008 [+], Newlove and Crawshaw 2009 [+]) and 1 systematic review of predominately non-UK studies (Boylan *et al.* 2012 [+]) provided views about the influence of language on the acceptability of messages about maintaining a healthy weight or preventing excess weight gain.

Three studies discussed acceptable language terminology in the context of an interaction between a person and a health care professional (Tailor and Ogden 2009 [+], Marno 2011 [+] and NHS Somerset 2011 [+]). One discussed language acceptability when used socially and when used by a health care professional (Gray *et al.* 2008 [++]). The remaining 2 discussed reactions and perceptions of health messages more generally (Department of Health 2008 [+], and Newlove and Crawshaw 2009 [+]).

Views were arranged into 3 language subthemes during synthesis to group similar issues raised across different studies. These were:

- Weight status sensitivity
- Terminology to describe weight status
- Language style

4.2.1 Weight status sensitivity

Views from 3 UK primary studies indicated there is potential to offend people when communicating weight status in the context of general communication (Gray *et al.* 2008 [++]) and when health professionals communicate with the public (NHS Somerset 2011 [+] and Marno 2011 [+]).

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Overweight or obese adult participants in 1 face to face or telephone interview study (Gray *et al.* 2008 [++]) agreed health professionals' should raise weight status but cautioned they should do so with sensitivity.

Health practitioners in a focus group and interview study (NHS Somerset 2011 [+]) and a closely related focus group study (Marno 2011 [+]) similarly felt that communicating weight status to overweight obese parents or their children was challenging and there was a risk of insulting parents, criticising their lifestyle, or telling them off.

"You know you're going to face a bit of conflict, because nobody is going to accept being ... having the suggestion made that they or their children are overweight. It's sort of taken as an insult isn't it?" [Early Years Practitioner, NHS Somerset 2011 [+]]

A parent from the same study recalled an instance where communication from health professionals about weight status had caused offense.

Gray *et al.* 2008 (++) also indicated health professionals may not be able to rely on a single 'one size fits all' approach to discussing excess weight with overweight or obese people because individuals react differently to different terminology and directness of approach. This parallels with the evidence that individuals may prefer different message styles (see Message Framing section 4.3) and highlights a potential need for message tailoring (see Message Tailoring, section 4.8.2).

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Evidence Statement 2: Language (weight status sensitivity)

Evidence from 3 UK primary studies (1 [++][1], [+][2,3]) indicated communicating weight status can be a sensitive issue socially[1] and for health professionals[2,3]. For example, some overweight or obese adults reacted negatively to being described as 'fat' or 'obese' socially because the terms were perceived to be associated with laziness or greed[1]. Health professionals also reported that telling parents their child was overweight might be taken as an insult[2]. Another study indicated health professionals might not be able to rely on a single "one size fits all" approach to discussing excess weight with people because individuals react differently to different terminology[1] (See Evidence Statement 3).

Applicability to the UK: All 3 studies are directly applicable to the UK.

[1] Gray *et al.* 2008 (++)
[2] NHS Somerset 2011 (+)
[3] Marno 2011 (+)

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4.2.2 Weight status terminology

Evidence from 4 UK primary studies (Gray *et al.* 2008 [++], Marno 2011 [+], Department of Health 2008 [+], Tailor and Ogden 2009 [+]) and 1 non-UK systematic review (Boylan *et al.* 2012 [+]) indicated the specific terminology to describe weight status influenced the acceptability of messages on maintaining a healthy weight or preventing excess weight gain. One study also indicated weight status terminology could influence the emotional impact of being told you are obese and the comprehension of the consequences (Tailor and Ogden 2009 [+]).

From the literature assessed, participants self-reported views indicated negative or undesirable terms to describe excess weight were:

- obesity (Department of Health 2008 [+], Marno 2011 [+] and Boylan *et al.* 2012 [+])
- obese, fat, excessive fat (Gray *et al.* 2008 [++])
- fatness (Boylan *et al.* 2012 [+])

Terms described as broadly desirable or acceptable came from just 1 study and included:

- Overweight, heavy, large, high BMI, unhealthy BMI and excessive weight (Gray *et al.* 2008 [++])

Two studies provided inconsistent views on whether the term “weight” was acceptable. One UK primary study (Department of Health 2008 [+]) among obese or overweight families suggested direct reference to the term “weight” may alienate parents and may mean they fail to recognise themselves as part of the audience for a health campaign or intervention. In contrast, a non-UK systematic review (Boylan *et al.* 2012 [+]), looking at reactions to weight related guidelines, indicated the term “weight” was considered an acceptable term as it was seen as non-judgemental and easily understood. The review conclusion was based on a single US quantitative study assessing weight guideline content containing n=219 obese, largely female adult participants.

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A health care professional in a focus group study (Marno 2011 [+]) stated the term obesity in particular might upset people and a second participant suggested the term “clinically obese” might be a more acceptable alternative. Both were in the context of an interaction between healthcare professional and public.

“I do use that word [obesity] and I particularly deliberately use that word…And some people take it well and some people don’t take it well. So I might consider using the word ‘clinically obese’ because that’s, that’s a pejorative word ‘obesity’ isn’t it. It’s used as a form of insult often so maybe I should use the term clinically obese”. [Participant characteristics NR]

Face-to-face or telephone interviews with 34 overweight or obese middle aged adults found that in day-to-day social conversation many participants thought ‘overweight’ or ‘heavy’ would be acceptable ways for someone to describe their current weight status and they often used these terms to describe themselves (Gray *et al.* 2008 [++]). ‘Large’, ‘high BMI’, ‘unhealthy BMI’ and ‘excessive weight’ were also endorsed as acceptable terms for general use. However, views were not uniform. Some men interviewed, particularly men unmotivated to lose weight, argued that BMI was an inaccurate way to measure weight status.

Reactions to the terms ‘obese’, ‘fat’, ‘excessive fat’ were usually negative when used socially (Gray *et al.* 2008 [++]). People made moral judgements in relation to ‘fat’ and ‘obese’ associating it with laziness or greed. The term ‘fat’ was viewed by some people, particularly women, as being too personal or too judgemental:

“I think there’s better ways of saying things. [..] I think ‘fat’ and ‘excessive fat’ sound critical, whereas the others sound more like constructive criticism” [55+ women, overweight, motivated to lose weight]

Terms considered socially acceptable were also endorsed for use by clinicians (Gray *et al.* 2008 [++]). The same study found most participants said

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they would respond differently to weight-related terms used socially compared to encounters with health professionals. There was recognition particularly among younger participants that "obese" was a clinical or medical term that did not necessarily equate with negative popular perceptions, but opinion was divided among older people. Some older people agreed health professionals could acceptably use the term ‘obese’ but others remained unconvinced.

4.2.2.1 Impact of terminology on motivation

Further discussions in Gray *et al.* 2008 (++) were about terms that might be motivational to lose weight. In people who were overweight or obese (Gray *et al.* 2008 [++]) it was clear there was disparity between some of the terms deemed acceptable and those that were perceived to be likely to motivate weight loss.

Among overweight and obese participants, the socially acceptable terms unhealthy BMI, high BMI and unhealthily high BMI were felt to be good terms to motivate weight loss because they were seen as professional and providing clear definition of the problem. However, the term overweight (deemed socially acceptable) was not generally seen as motivational to lose weight. The study authors thought this might be a sign that many people felt comfortable with being described as ‘overweight’ as it was somewhat normalised in society.

Many younger and motivated people in Gray *et al.* 2008 (++) thought ‘obese’ (unacceptable socially) could be used to encourage weight loss, however using ‘obese’ inappropriately would be counterproductive. “Fat” (deemed unacceptable socially) and “large” (acceptable socially) were not considered motivational even when used by a health professional. These observations highlighted how terms could be acceptable but not perceived to be motivational, and vice versa, that the socially unacceptable term “obese” could be potentially motivational for weight loss for some. The findings are potentially limited because participants reported their perceived change in motivation in reaction to the terms. Motivation was not verified in any way, or

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validated against an assessment of intentions change behaviour. Hence, in reality motivation may not have changed at all.

"The words that to me, the words that would upset you would probably be the ones that are more likely to get you to do something about it." [35+, overweight, unmotivated to lose weight]

Opinion and reaction from the interviews differed depending on individual motivation to lose weight, age and gender suggesting a one-size fits all approach to messaging may not achieve acceptability for all. Message tailoring in one option to potentially to address this variation (see message tailoring section 4.8.2)

4.2.2.2 Impact of terminology on beliefs

Tailor and Ogden 2009 (+) explored the impact of using the term "obese" compared to a GP's preferred euphemism "your weight may be affecting your health" on patients beliefs about being told they are obese. It recruited 449 largely non-obese female adults (mean BMI 25.7kg/m^2, BMI <30 80.8% [not obese]; obese BMI 30+ 19.2%]) and asked them to rate their beliefs following a hypothetical vignette using either the term "obese" or the GPs preferred euphemism. The majority of participants were not obese (80.8% had a BMI of less than 30) but were asked to rate messages as if they were. It is not clear how accurately this represented the views of people who were actually obese. Nonetheless, people who are overweight may also be concerned about how obese people are labelled as they may become obese in the future.

The study found being told "you are obese" was associated with people believing the problem had more serious consequences and having a greater emotional impact than being told, "your weight may be damaging your health". There was no significant difference in their impact on patient understanding of the problem, their trust in the doctor, their personal ability to control the problem, the timeline of the problem, the likelihood that treatment could control the problem or the cyclical timeline of the problem.

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Participants' own weight status influenced their reaction to the two terms. Participants who were not obese felt more anxious and depressed when the term 'obese' was used compared to the euphemism. Whereas obese patients felt more anxious and depressed when, 'your weight may be damaging your health' was used. So in terms of emotional impact "obese" appeared more acceptable than the euphemism to obese participants, which is contrast to other reports indicating the term "obese" or "obesity" is not acceptable to this group (Gray *et al.* 2008 [++], Department of Health 2008 [+], Marno 2011 [+] and Boylan *et al.* 2012 [+]).

The study authors hypothesised that this may be because people who are obese feel less upset by the term 'obese' because it implies that the problem is something that has happened to them rather than something they would have caused and could be blamed for personally.

The study implied this finding showed weight status terminology was influencing the emotional impact and comprehension of the message. However, the 2 messages chosen may also have differed in their content, meaning it may not simply be terminology causing the difference. For example, "you are obese" could be interpreted as a term based on a medical fact or objective measurement, while "you weight may be damaging your health" could be seen as more subjective. This possibility makes it difficult to assess whether the language, content, or a combination of both, were behind the different comprehensions of the messages.

The authors' concluding remarks indicated that for patients who are obese, using the term "obese" may allow GPs to share their expertise and knowledge without compromising the patient's feelings.

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Evidence Statement 3: Language (weight status terminology)

Evidence from 4 UK primary studies (1 [++][1], 3 [+][2,3,4]) and 1 (+) non-UK systematic review[5] indicated that specific terminology to describe weight status can affect the acceptability of messages about maintaining a healthy weight or preventing excess weight gain.

Terms described as broadly unacceptable included obesity[2,3,5] , obese[1], fat[1], excessive fat[1] and fatness[5]. Acceptable terms included overweight, heavy, large, high BMI, unhealthy BMI and excessive weight[1]. Some acceptable terms (such as overweight and large) were not perceived to be likely to motivate weight loss[1]. Two studies provided inconsistent views on whether the term "weight" was acceptable[2,5] . Using the phrase "your weight may be damaging your health" influenced the emotional impact and comprehension of consequences compared with being told, "you are obese" [4].

Applicability to the UK: Only the results of the systematic review[5] are not directly applicable to the UK as it contained predominantly non-UK research.

[1] Gray *et al.* 2008 (++)
[2] Department of Health 2008 (+)
[3] Marno 2011 (+)
[4] Tailor and Ogden 2009 (+)
[5] Boylan *et al.* 2012 (+)

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4.2.3 Language style and terminology

Two UK studies (Department of Health 2008 [+], Newlove and Crawshaw 2009 [+]) and 1 non-UK systematic review (Boylan *et al.* 2012 [+]) indicated the style of language and specific terminology not directly connected to weight status are likely to influence the acceptability of messages communicated about maintaining a healthy weight and preventing excess weight gain

The largest contributor to this theme was the Department of Health 2008 (+) consumer insight study. It produced communication suggestions based on 12 group discussions with parents from overweight or obese families potentially limiting transferability of the findings to other weight status groups and contexts.

During synthesis, data relating to language style and those relating to specific non-weight status related terminology were grouped separately.

4.2.3.1 Language style

Two UK studies found telling people what to do could prompt a negative reaction and may be unacceptable. One study (Department of Health 2008 [+]) stated you should not tell parents what to do because it may alienate them. Views from unemployed men in a focus group study (Newlove and Crawshaw 2009 [+]) showed health messages perceived as forcing someone into a particular behaviour would be seen negatively by some.

"I think it is wrong how they try and tell you what you should and shouldn't do, its right they are advising ya but they can't tell ya what you should and shouldn't do" [22-year-old unemployed male]

The Department of Health 2008 (+) consumer insight study suggested that the language used to communicate issues around childhood weight needs to be clear, simple and non-judgemental, and the tone of voice needs to be empathetic and positive. It stated parents require specific, supportive messages that empower them to make changes. It also suggested, messages

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need to feel relevant, actionable, should be easily adaptable to normal family life, and presented in a down-to-earth way (Department of Health 2008 [+]).

The only study to mention potential stigmatisation was the non-UK systematic review including 46 studies, only 3 of which were UK based (Boylan *et al.* 2012 [+]). It found many people who were either overweight or obese reported feeling stigmatised by the simplicity of guideline messages and felt that messages should recognise the complexity of obesity. The review conclusion was based on 1 Australian qualitative study on weight guideline content recruiting n=142 mainly female adult participants who were obese (62%) or severely obese (38%).

A number of further suggestions relating to the style of communication came from the Department of Health 2008 (+) study alone. They included:

- Acknowledging parents' concerns and reflecting them back to them by using phrases such as 'It's hard to say no to your kids' to demonstrate understanding and empathy.
- Focusing on future dangers (not further defined, appeared likely to be health consequences), which most parents are willing to acknowledge, to reduce the risk of parents 'opting out' of a communication because they don't believe their children are currently overweight or inactive.
- Avoid being judgemental; for example, avoid talking about the 'right' foods or 'good' and 'bad' energy.
- If talking about weight is necessary, use clear, simple language. Explain jargon and define terms such as 'overweight' and 'obese'.

Other data from the same study was explained and linked back to specific comments from the parents in the report. However, this was not present for data relating to language presented above so it was not possible to gain further insight or explore nuance in these suggestions.

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4.2.3.2 Specific terminology

The consumer insight study suggested using empathic terms like ‘we’, rather than ‘us’ and ‘you’, and reported the most acceptable communications were those that felt as if they were written by ‘another parent’ (Department of Health 2008 [+]). It suggested using “could happen’ rather than ‘will happen’ when talking about negative consequences and using the kind of colloquial phrases that parents use themselves, like ‘bags of energy’. This was broadly consistent with Boylan *et al.* 2012 (+) who found positive and suggestive terminologies, for example, ‘choose occasionally’, ‘could’ and ‘how about?’ were reported as most desirable by consumers of weight related guidelines.

The systematic review alone (Boylan *et al.* 2012 [+]) suggested there may be ambiguity when using the terms “health” and “balance”. It reported children see the term “health” as negative, and tend to associate “good health” more with diet than physical activity and “diet” with weight loss. On the other hand, parents felt that a ‘healthy child’ was a child without medical problems and that weight was only an issue if it prevented children from keeping up physically or socially with peers.

Furthermore, it reported individuals have different understandings of the term “balance” and many feel uncomfortable when using this term when it comes to foods that should be restricted (Boylan *et al.* 2012 [+]). For example, regarding the guideline message, ‘Balance your consumption of high-fat and low fat foods’, some interpreted this as balancing high-fat foods with other high-fat foods, while others understood it to mean that high-fat foods are permitted when balanced with the same number of low-fat foods. The review indicated ambiguity surrounding the term ‘balance’ was an important issue to address as a number of dietary guidelines it reviewed used the concept of balance. A closely related concept of achieving a balance of diet and physical activity is discussed in the Combined Messages theme, section 4.5.

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Evidence Statement 4: Language style and terminology

Language style

Evidence from 2 (+) UK primary studies[1, 2] suggested that telling people what to do could provoke a negative reaction.

One (+) study[1] suggested communication about childhood weight (targeting overweight families) needed to be clear, simple and non-judgemental. Parents required specific, supportive messages that empower them to make changes that were applicable, actionable, easily adaptable to normal family life, and presented in a down-to-earth way[1].

One (+) non-UK systematic review found people who were overweight or obese reported feeling stigmatised by the simplicity of guideline messages as they do not recognise the complexity of obesity[3].

Specific terminology

Two studies[1,3] suggested positive, empathic, suggestive terms (e.g. “we” rather than “us” or “you”; “could happen” rather than “will happen”; “choose occasionally”; “could”, and “how about?”) may be acceptable in communication with overweight families[1] and weight related guideline consumers[3]. The terms “health” and “balance” can be ambiguous and interpreted differently by message recipients[3].

Applicability to the UK: Only the results of the systematic review[3] are not directly applicable to the UK as it contained predominantly non-UK research.

[1] Department of Health 2008 (+)
[2] Newlove and Crawshaw 2009 (+)

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4.3 Message framing

Message framing was defined as the way a health message was phrased in terms of its positive (gain frame) or negative features (loss frame).

Evidence from 3 (+) UK primary studies (NHS Somerset 2011 [+], Newlove and Crawshaw 2009, [+] Department of Health 2008 [+]) and 2 non-UK systematic reviews (Boylan *et al.* 2012 [+] and Latimer *et al.* 2010 [+]) provided views on the impact of message framing on the acceptability of messages about maintaining a healthy weight or preventing excess weight gain.

Message proposition testing by the Department of Health 2008 (+) provided the most wide-ranging views, but these were mainly from parents in overweight and obese families, potentially limiting applicability to the general population unselected for weight status.

4.3.1 Gain frame

Evidence from 3 UK primary studies (NHS Somerset 2011 [+], Department of Health 2008 [+], Newlove and Crawshaw 2009 [+]) provided consistent views that gain framed messages were acceptable. Parents from overweight families preferred different types of gain-framed messages compared with parents specifically from Bangladeshi, Pakistani and Black African families (Department of Health 2008 [+]). This difference in message framing preference by ethnicity was highlighted only for physical activity messages.

Parents from overweight or obese families (further demographics not described) viewed gain frame messages emphasising non-health benefits of physical activity positively (Department of Health 2008 [+]). Popular messages aimed to persuade parents that taking part in activities together was a good way of bonding with their children and creating happy family memories. Another aimed to show parents that children are happy when they're active and that exercise delivers benefits other than fitness, for example by helping children sleep well at night (Department of Health 2008 [+]).

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These findings applied to physical activity messages only. The study indicated that using similar message styles for diet messages would not be advisable and made different recommendations about constructing diet messages relating to explaining long term health consequences, a separate theme (see section 4.7).

Parents specifically from Bangladeshi, Pakistani and Black African communities found these types of messages too emotional and soft (Department of Health 2008 [+]). They did not respond to the idea of using family activities to generate happy memories, and could not understand the link between the message proposition and the need to improve diet and increase levels of physical activity. This reflected insight that these parents may not connect health with happiness in the same way that other communities do, and may reflect the absence of physical activity traditions in their cultural life (Swanton 2008, quality not assessed as based on Department of Health 2008 [+] see section 3.5.3). These parents preferred physical activity messages framed in terms of improving their child's educational attainment or future success, such as helping them learn and concentrate better at school (Department of Health 2008 [+]).

"The idea of linking children's health to learning and education is what will get parents to take notice because they all want their children to do well." [Bangladeshi man, London]

For parents of overweight and obese families the study suggested focusing on future dangers (not further defined, unclear if solely health consequences), which most parents are willing to acknowledge, may reduce the risk of parents 'opting out' of a communication because they don't believe their children are currently overweight or inactive (Department of Health 2008 [+]). However, it suggested it was possible to talk more directly to parents from Bangladeshi, Pakistani and Black African communities about the dangers of childhood obesity. The issue was not as emotive in these communities so de-selection was less likely (Swanton 2008).

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Best practice recommendations for health practitioners communicating healthy weight in NHS Somerset 2011 (+) also supported gain framed messages. They suggested a greater focus on empathy and the building of self-esteem through positive messages rather than critical or negative messages was required.

Young people in NHS Somerset 2011 (+) felt health messages were too general and too focused on the scientific aspects of nutrition and overweight with insufficient emphasis on the emotional aspects. Young people's preference was for the provision of more detailed information focussing on why it is better to eat healthily or maintain a healthy weight.

4.3.2 Choice

Participants in both NHS Somerset 2011 (+) and Newlove and Crawshaw 2009 (+) described that if messages were framed in a way that told people what to do, they were less acceptable and may cause a negative reaction or resistance to the message in the recipient. This was the view from adult unemployed men and health practitioners.

I think it is wrong how they try and tell you what you should and shouldn't do, its right they are advising ya but they can't tell ya what you should and shouldn't do" [22 year old unemployed male]

This was consistent with views expressed in the Department of Health 2008 (+) that suggested it was a bad idea to telling parents what to do as it alienates them (see Language, section 4.2.3.1).

4.3.3 Humour and shock tactics

In a study of 28 predominantly white British unemployed men (mean age 36; range 22 to 54, weight status NR), participants views around message style (including framing) were not consistent in terms of messages most likely to motivate, change behaviour or be remembered (Newlove and Crawshaw 2009 [+]). Some men thought humorous messages were remembered the most but were perceived as leading to potential stigmatisation of the people they were

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aimed at. Shock styles were considered more likely to change behaviour (using a stop smoking example), but this view was not shared by all. Shock campaigns were considered “emotional blackmail” or “propaganda” by others. This was the only study to report on such issues.

4.3.4 Systematic reviews

The views from the systematic reviews were brief and not particularly insightful (Boylan *et al.* 2012 [+] and Latimer *et al.* 2010 [+]). Latimer *et al.* 2010 (+) provided the more relevant findings in cautiously recommending the use of gain-framed messages (rather than loss-framed messages) for creating messages to accompany physical activity guidelines. They stated research had begun to examine the utility of mixed frame messages (positive and negative frame) but the findings have been equivocal. Until further evidence is available, they suggested using strict gain-framed messages to encourage physical activity participation. Overall, the review concluded strong evidence to support definitive recommendations for optimal message content and structure was lacking (Latimer *et al.* 2010 [+]).

These recommendations were based on 6 largely experimental studies exploring the effectiveness of message framing for physical activity messages. The review conclusions (Latimer *et al.* 2010 [+]) were broadly consistent with the qualitative findings of the UK primary literature (NHS Somerset 2011 [+], Department of Health 2008 [+], Newlove and Crawshaw 2009 [+]).

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Evidence Statement 5: Message framing

Evidence from 3 (+) UK primary studies[1,2,3] and 1 (+) systematic review[4] provided consistent views that positive, gain-framed messages were acceptable.

For physical activity messages only; focussing on positive, non-health-related benefits, such as creating happy family memories, were acceptable to parents of overweight and obese families (ethnicity not specified) but parents specifically from Bangladeshi, Pakistani and Black African families found them too soft and emotional[2]. These parents preferred messages emphasising benefits to their children's learning, education and future success[2].

Some long term unemployed men thought general health messages using shock tactics could be effective for stimulating behaviour change, a stop smoking example was used, but others viewed them as "emotional blackmail" or "propaganda"[3]. These men indicated humorous health messages could be memorable but risked being stigmatising[3]. Three studies indicated telling people what to do in relation to their diet, physical activity or body weight was unacceptable and messages seen as forcing a particular behaviour are likely to be resisted[1,2,3] .

Applicability to the UK: results from the primary literature[1,2,3] are applicable to the UK. The review[4] did not report what country included studies were from, so its applicability is unclear.

[1] NHS Somerset 2011 (+)
[2] Department of Health 2008 (+)
[3] Newlove and Crawshaw 2009 (+)
[4] Latimer *et al.* 2010 (+)

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4.4 Attitudes to receiving more information on diet

This theme emerged in relation to people's reaction to the prospect of receiving more or new information about healthy weight.

Evidence from 1 UK primary study (Croker *et al.* 2009 [++]) and 1 systematic review (Boylan *et al.* 2012 [+]) provided information on people's views towards receiving more information about maintaining a healthy weight or preventing excess weight gain.

Views of 14 mothers of 8 to 11 year olds (weight status of mother or child NR) in the UK indicated that guidelines that included weighing or measuring portion sizes would not be acceptable (Croker *et al.* 2009 [++]). This was a negative reaction to the prospect of new guidelines, rather than guidelines already in use. Some mothers felt they were already bombarded with too much information and advice on parenting, and that information on weighing and measuring portions would not be welcomed or helpful because it was not something they would be prepared to do (Croker *et al.* 2009 [++]).

Similar, overtones of information overload were highlighted in the systematic review (Boylan *et al.* 2012 [+]). This cited studies in both adults and young people indicating some groups were tired of hearing about what foods they should eat. The review concluded that overloading individuals with advice may lead to rejection of guidelines rather than adoption of new information (Boylan *et al.* 2012 [+]).

Despite the lack of interest in any official guidelines for portion sizes, parents in Croker *et al.* 2009 (++) were aware of the need to control portions to some extent. However, parents felt they generally used intuition and guesswork to ensure their children received a serving appropriate to their needs and they believed every child was different.

The views of the 2 studies related almost exclusively to dietary related guidelines, and in 1 study, very specifically to measuring and weighing portion

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sizes for children (Croker *et al.* 2009 [++]) potentially limiting applicability to other contexts. As there was only 1 UK study and 1 systematic review (largely non-UK studies) contributing evidence to this theme, the views may not be representative of the majority of mothers, or the general population of the UK as a whole.

Evidence Statement 6: Attitudes to receiving more information on diet

Evidence from 1 (++) UK focus group study[1] indicated some mothers of 8 to 11 year olds felt they were already bombarded with too much information and advice on parenting, and that information on weighing and measuring portions would not be helpful as this was not something they would be prepared to do and may ignore this advice. The study included 14 mothers, 12 of whom were white British (weight status not reported). Evidence from 1 (+) non-UK systematic review[2] identified studies supporting this observation; adults and children suggested they were tired of hearing about what foods they should eat. The study concluded that overloading individuals with advice might lead to rejection of guidelines rather than adoption of new information[2].

Applicability to the UK: The results from the primary literature[1] are applicable to the UK. The results of the review[2] are potentially less applicable as they contain predominantly non-UK research and views.

[1] Croker *et al.* 2009 (++)
[2] Boylan *et al.* 2012 (+)

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4.5 Combined messages

This theme relates to whether it is acceptable to combine both diet and physical activity messages in the same communication, for example, “balance your diet and exercise as part of a healthy lifestyle”.

One UK primary study (Department of Health 2008 [+]) and 1 systematic review (Boylan *et al.* 2012 [+]) provided data on people’s views on the acceptability of combining physical activity and diet messages when communicating about maintaining a healthy weight or preventing excess weight gain.

The UK study (Department of Health 2008 [+]) contained views mainly from parents in overweight or obese families, which may limit the transferability to the general population unselected for weight status. Similarly, the systematic review contained largely US studies, only 3 of 46 were UK based, also potentially limiting the applicability of its findings to the UK population.

The Department of Health 2008 (+) study found that where messages about diet and activity are combined, diet messages dominate and the activity component may be ignored, regardless of the order in which messages are presented. This, it reported, was because parents were likely to acknowledge the need for dietary change but fail to recognise the need for a change in activity levels. Many assumed their children were active enough, or got enough physical activity at school (Department of Health 2008 [+]).The report authors’ advised that communications would have to work hard to encourage take-up of messages about physical activity.

In general the study indicated parents found it difficult to make the link between diet and activity, and may struggle to accept communications that try to make that connection clear (Department of Health 2008 [+]).

A potential problem of combining messages was that they may reinforce the belief already held by some parents that “it doesn’t matter what they eat as long as they are active”, serving to perpetuate unhealthy diets (Department of

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Health 2008 [+]). This was supported by views in a systematic review of reactions to healthy weight guidelines (Boylan *et al.* 2012 [+]). The review warned that combining messages and using a concept of balance could be interpreted to mean that overconsumption of food can be counteracted by over-exercising, or if consumption is low, exercise is not required.

To be sufficiently motivating the UK study suggested communications relating to diet and physical activity must be occupy different emotional areas (Department of Health 2008 [+]). It suggested diet messages should outweighed the short-term negative consequences associated in parents' minds of trying to change their child's diet (e.g. time, cost, convenience, child fussiness) with the greater long-term negative consequences of failing to change their behaviour (see Message Framing section 4.3 and Health Consequences section 4.7). For physical activity, it suggested messages focusing on positive, non-health-related benefits, such as creating happy family memories were acceptable. This was not the case for parents from Bangladeshi, Pakistani and Black African communities who preferred messages linked to their child's educational attainment and future success (see Message Framing, section 4.3).

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Evidence Statement 7: Combining messages for diet and physical activity

Evidence from 1 (+) UK study[1] showed that when aspects of diet and physical activity are combined in the same message diet messages dominate and the activity component is ignored, regardless of the order in which they are presented.

Combined messages indicating a "balance" of diet and physical activity can be misinterpreted. Combined messages also have the potential to reinforce the belief that "it doesn't matter what children eat as long as they are active", serving to perpetuate unhealthy diets[1]. This was supported by a (+) systematic review[2] that also identified the belief that if food consumption was low, physical activity was not needed[2].

Applicability to the UK: The primary study[1] was directly applicable although it was primarily views of parents from overweight or obese families, potentially limiting transferability to other groups. The systematic review[2] may be less applicable as it contained predominantly non-UK research and views.

[1] Department of Health 2008 (+)
[2] Boylan *et al.* 2012 (+)

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4.6 Conflicting messages

This theme acknowledged that people receive information about maintaining a healthy weight and preventing excess weight gain from multiple sources. Messages may conflict, potentially influencing the acceptability of individual messages.

Two UK primary studies (NHS Somerset 2011 [+] and Marno 2011 [+]) and 1 systematic review (Boylan *et al.* 2012 [+]) contributed views to this theme. A limitation of both UK studies (NHS Somerset 2011 [+] and Marno 2011 [+]) was that both discussed communication in the context of health professionals communicating with the public, potentially limiting transferability to other contexts. The systematic review gathered views on reactions to weight related guidelines (mainly diet) but contained mainly views from adult women residing in the US (only 3 of 46 studies were UK based), also potentially limiting transferability of its findings to the UK.

One of 5 focus groups in Marno 2011 (+) emphasised there were conflicting messages from the media and public health sources and indicated this may influence behaviour. Views recognised diet messages from public health campaigns endorsed an “everything in moderation” and “healthy eating as a way of life” angle, whereas messages from the media were conflicting and about short term dieting. One participant recalled frustration at a health professional colleague who ignored public health advice in favour of short-term term fixes.

“I have people at work, people I work with who do it and I think I want to smack their head on the wall, why are you doing this, you know, you’re health professional and you’re doing exactly what we’re telling people not to do.” [Participant details not reported, likely a health professional]

The NHS Somerset 2011 (+) focus group study outlined health practitioners views that there were conflicting messages from parents’ relatives and wider networks that affected healthy weight communication, or could prevent messages being taken on board. An example was how older relatives used

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unhealthy treats to show affection, sending inconsistent messages to parents and children. The study, a service review, concluded there was a need for more consistent and coherent messages coming from the medical community in NHS Somerset, for example, consistency between advice from health practitioners and GPs (NHS Somerset 2011 [+]).

Evidence from the systematic review (Boylan *et al.* 2012 [+]) broadly supported the findings of the UK literature (NHS Somerset 2011 [+] and Marno 2011 [+]).

The review indicated that achieving message credibility in weight related guidelines was a difficult challenge, as nutritional messages in health promotion and commercial sources were perceived as conflicting by consumers of information. They reported that contradictory messages regarding food, and the expectation that information would change over time, were responsible for generating anger among individuals (Boylan *et al.* 2012 [+]).

Discussing the implications the review indicated that even if messages in guidelines were delivered in an acceptable manner, the task of reducing the conflict between different sources of information needs to be tackled (Boylan *et al.* 2012 [+]). It recommended that those responsible for developing weight-related guidelines could engage with communications or media professionals to assist accurate and effective communication of messages, potentially improving consumer comprehension of such guidelines.

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Evidence Statement 8: Conflicting messages

Evidence from 2 UK (+) focus group studies[1,2] and 1 (+) systematic review[3] indicated health messages are not viewed or comprehended in isolation. Conflicting messages from non-health sources (mainstream media, relatives and wider social networks)[1,2] abound with nutritional messages in health promotion and commercial sources being perceived by consumers as conflicting. This conflict potentially reduces the credibility of health promotion messages. One systematic review[3] suggested that those responsible for developing weight-related guidelines could engage with communication or media professionals to assist accurate and effective communication of messages, thereby improving consumer comprehension of such guidelines.

Applicability to the UK: The results from the primary studies[1,2] are applicable to the UK. The results of the systematic review[3] are potentially less applicable as they contain predominantly non-UK research and views.

[1] NHS Somerset 2011 (+)

[2] Marno 2011 (+)

[3] Boylan *et al.* 2012 (+)

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4.7 Health consequences

This theme concerned the influence of including elements of health consequences, such as future risks of developing weight related diseases, on the acceptability of messages about maintaining and healthy weight or preventing excess weight gain.

We considered merging this theme into a subcategory of message framing during synthesis (see section 4.3). However, it was kept separate as it related specifically to diet related messages, whereas the existing message framing theme was heavily weighted towards physical activity messages. This seemed a natural divide to maintain.

One moderate quality UK primary study (Department of Health 2008 [+]) provided views on this theme. It in part sampled views from parents of overweight or obese families potentially limiting transferability of findings to the general population unselected for weight status.

The message testing study indicated the most popular propositions for diet only messages were those that outweighed the short-term negative consequences of parents' trying to change their child's diet (e.g. time, cost, convenience, child fussiness etc.) with the greater long-term negative health consequences of failing to change their behaviour, such as increased disease risk (Department of Health 2008 [+]).

An acceptable and favoured concept was "killing with kindness". Based around the idea that parents' tendency to give in to children's demands for unhealthy foods or to appease or reward children with unhealthy foods will ultimately harm them, despite loving intentions. Unlike physical activity messages where differences emerged between ethnic groups, messages around this concept were favoured by parents from obese and overweight families and parents specifically from Bangladeshi, Pakistani and Black African communities (weight status NR). Both groups saw the messages as easy to understand and engaging (Department of Health 2008 [+]).

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‘It’s straight to the point and it’s like a wake-up call, that what you are doing in the name of love could be harming your children and no one wants that.’ [Pakistani woman, Bradford]

The study indicated the approach wouldn’t work for messages relating to activity, because parents find it hard to make the connection between physical inactivity and long-term health problems, or to understand the concept of ‘giving in’ or ‘setting limits’ in this area (Department of Health 2008 [+]). Successful physical activity messages were not about health consequences and instead emphasised the non-health benefits of physical activity, such creating happy family memories or improving children’s attainment at school (discussed in section 4.3.1).

The study indicated shocking parents with the long-term negative health consequences of failing to change diet related behaviour can be motivating but advised caution in the specific wording used. For instance, the concept of “killing with kindness” was most popular with parents when they understood it to mean long-term, cumulative damage to children’s health. The idea of ‘killing’ on its own was seen by some as scaremongering. As a result the study suggested careful testing of messages with representative focus groups was advisable before messages are used more widely (Department of Health 2008 [+]).

Company Registered in England and Wales No: 3724527. VAT Registration No. 752 5287 20.

Evidence Statement 9: Health consequences

Evidence from 1 (+) UK study[1] showed parents preferred messages that explained how the long term health consequences of an unhealthy diet (death and disease) outweighed the short term costs around changing their child's diet (e.g. the fuss of denying them unhealthy snacks).

Using phrases such as 'killing with kindness' that shocked parents with the long-term negative health consequences of failing to change diet related behaviour was motivating when parents understood it mean long-term, cumulative damage to children's health. Using "killing" on its own was seen as scaremongering by some. The study advised testing the exact wording of messages with representative focus groups before messages are used widely[1].

Applicability to the UK: The results are applicable to the UK although it was primarily views of parents from overweight or obese families, potentially limiting transferability to other groups.

[1] Department of Health 2008 (+)

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4.8 Review only themes

This section contains themes that were only identified in 1 or both of the 2 systematic reviews included in this review (Boylan *et al.* 2012 [+] and Latimer *et al.* 2010 [+]). These themes were not explicitly identified in any of the included primary UK literature. They broadly cover the general preferred content of guidelines (Boylan *et al.* 2012 [+]) and message tailoring (Boylan *et al.* 2012 [+] and Latimer *et al.* 2010 [+]).

4.8.1 General content of guidelines

One systematic review (Boylan *et al.* 2012 [+]) included 46 quantitative or qualitative studies (3 based in the UK) exploring children, young people and adults' (termed "consumers") reactions to weight related guidelines. Almost all of the studies retrieved related to diet guidelines and the study populations were predominantly female adults residing in the US with weight status not reported or unselected. These factors potentially limit the transferability of views to the general UK population.

It reported specific summary findings on the content of messages including:

- Individuals reported guidelines were confusing so required simple, clear, specific, realistic, and in some cases tailored, guidelines.
- Flexible guidelines may be needed to prevent endorsing a sense of failure if people cannot live up to them.
- Terminology used in messages may play an important role in an individual's understanding and acceptance of guidelines.
- Positive and suggestive terminologies are most desired by consumers; however, research indicates that negative messages may be more persuasive than positive messages.

The conclusions about terminology and positive suggestive terminology above are broadly supportive of the themes of language and message framing identified in the UK studies (see sections 4.2 and 4.3 respectively). However,

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the insight that negative messages may be more persuasive than positive was not clearly identified in the UK primary literature reviewed.

The review also indicated that many participants felt guidelines should be more specific about the types of food to eat and the amounts. For example, specifying cups of vegetables or minutes of physical activity instead of less precise language around servings or sedentary behaviour (Boylan *et al.* 2012 [+]). This was inconsistent with the sentiments expressed in Croker *et al.* 2009 (++) indicating UK mothers would not welcome diet guidelines involving measuring (or weighing) portion sizes for their children (see section 4.4). The apparent difference in views is potentially due to differences in the specifics of portion size discussed and the context in which they were discussed, which differed between the two studies.

The review also indicated that:

- more detailed guidelines may offer consumers more ways to follow the advice.
- visually differentiated messages may improve guideline clarity e.g. solid fat vs. oil.
- consumers felt that advice on grains, fruit and vegetable intake are the most important components of dietary guidelines; however, the inclusion of alcohol in dietary guidelines may be questionable.
- consumers indicated a desire to have statements around reducing inactivity included in physical activity guidelines.
- consumers favour the concept of a balanced diet.
- current guidelines were sometimes described as too prescriptive and that restricting foods is not perceived by consumers to be the key to better health.
- some individuals felt that eating low-fat foods reduced the pleasure of eating and so may be reluctant to adhere to recommendations to consume such foods.

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- more flexible guidelines may be needed so that the focus is not solely on healthy behaviour, but also allows room for some unhealthy behaviour. For example, some consumers believe that extra (unhealthy) foods should be included in guidelines as they are simply “part of life”.
- guidelines that are perceived as being too prescriptive endorse a sense of failure among parents who feel that they cannot meet the exact criteria for a ‘healthy child’. However, when determining the ‘flexibility’ of a message, it may be important to get the balance right. A lack of constraint may be too permissive and too much restriction may be resented.

The review concluded skilful testing might be required to achieve an appropriate balance between providing the degree of information needed and communicating this detail effectively.

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Evidence Statement 10: General content

Evidence from 1 (+) systematic review[1] assessing adult and child reactions to weight related guidelines made the following summary suggestions relevant to content acceptability:

- guidelines can be confusing. Consumers need simple, clear, specific and realistic guidelines
- guideline consumers desired positive and suggestive terminologies; however, negative messages may be more persuasive
- flexible guidelines (acknowledging unhealthy behaviour occurs and allows room for it) may be needed to prevent endorsing a sense of failure if people cannot live up to them
- terminology plays an important role in an individual's understanding and acceptance of guidelines.

Some participants felt guidelines should be more specific about the types of food to eat and the amounts[1]. For example, specifying cups of vegetables or minutes of physical activity instead of less precise language around servings or sedentary behaviour. This appeared inconsistent with a (++) UK study[2] indicating UK mothers would not welcome diet guidelines involving measuring (or weighing) portion sizes for their children in Evidence Statement 6.

Applicability to the UK: The review included 46 quantitative or qualitative studies. Just 3 were based in the UK potentially limiting applicability to the UK. For example, using cups as a measure of food volume is more common in the US than the UK.

[1] Boylan *et al.* 2012 (+)
[2] Croker *et al.* 2009 (++)

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4.8.2 Message tailoring

Both systematic reviews indicated message tailoring may increase the acceptability (Boylan *et al.* 2012 [+]) or effectiveness (Latimer *et al.* 2010 [+]) of healthy weight communications.

Boylan *et al.* 2012 (+) concluded that there was good evidence that individuals require tailored guidelines of healthy weight. The review reported differences in the perception of weight related recommendations and reasons for making food choices by gender, age, weight and socioeconomic status. For example, older individuals were more likely to make choices based on health reasons, while younger individuals are more concerned about knowledge, prices and time.

It also reported cultural factors were important to consider because some studies suggested guidelines would not be adhered to if they defy religious practices, traditional food preparation or preferences.

On a practical level, the review suggested tailoring guidelines to gender, age, weight, socioeconomic status and ethnicity may traditionally require a lot of time and effort. It suggested that newer media channels such as the internet and mobile telephones, and new marketing techniques such as customer relationship management, may provide more efficient means to achieve mass tailoring (Boylan *et al.* 2012 [+]). Alternatively, it suggested it may be appropriate for tailored guidelines to primarily target population subgroups that appear to be most in need of attention (Boylan *et al.* 2012 [+]).

The second systematic review (Latimer *et al.* 2010 [+]) indicated message tailoring might increase the effectiveness of physical activity messages to change behaviour. It included 22 largely experimental studies exploring the effectiveness of 3 approaches to constructing physical activity messages. The country of origin of the included studies was not reported, limiting the ability to assess applicability and transferability of the findings to the UK. Overall, it concluded strong evidence to support definitive recommendations for optimal

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message content and structure was lacking. However, it stated there was evidence that tailoring messages may have some advantages over generic messages, and recommended that when the messages can be tailored easily and with little additional financial cost, tailoring should be considered (Latimer *et al.* 2010 [+]).

Latimer *et al.* 2010 (+) suggested the “stages of change” within the transtheoretical model of behaviour change were appropriate targets for tailoring. However, this was because the tailoring referred to in the systematic review was overwhelmingly based on this behaviour change model (Latimer *et al.* 2010 [+]). The review did not refer to the large range of other tailoring possibilities, such as tailoring based on age, gender, cultural or educational background, or other behaviour change models. This may reflect a bias in the health promotion research literature towards use of the transtheoretical model as it is one of the more widely popularised behaviour change models. So while it may be the most reported model, and subsequently featured in the recommendations of Latimer *et al.* 2010, it may not be the most acceptable or effective criteria on which to base message tailoring.

The review made a weaker recommendation on tailoring messages based on self-efficacy, the strength of ones belief in one’s own ability to change. Based on 4 studies it concluded results using messages to change self-efficacy or perceived behavioural control were mixed and that there was insufficient evidence to confirm a reliable systematic effect (Latimer *et al.* 2010 [+]).

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Evidence Statement 11: Message tailoring

Evidence from 2 (+) systematic reviews[1,2] indicated message tailoring may increase the acceptability[1] and or effectiveness[2] of healthy weight communications.

The perception of weight related guideline recommendations differed by age, gender, weight and socioeconomic status[1], furthermore, religious practices, traditional food preparation and preferences may also influence perceptions. One review on physical activity messages only[2], concluded strong evidence to support definitive recommendations for message content and structure was lacking. However, there was evidence that tailoring messages to individuals' stage of change (transtheoretical model of behaviour change) may have some advantages over generic messages. It suggested that when messages can be tailored easily and with little additional financial cost, tailoring should be considered[2]. It was suggested that the internet and mobile phones might make mass tailoring more achievable and limited tailoring resources could be focussed on groups most in need[1], there is no reason to suspect this should be different for physical activity.

Applicability to the UK: One review[1] included mainly non-UK studies potentially limiting applicability to the UK whereas the second[2] did not report country of origin of the included studies so applicability was unclear.

[1] Boylan *et al.* 2012 (+)
[2] Latimer *et al.* 2010 (+)

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5 Discussion

Based on 7 UK studies this review identified 6 emergent conceptual themes to consider when developing acceptable messages about maintaining a healthy weight or preventing excess weight gain. They include:

- language
- message framing
- attitudes to receiving more information
- combined messages
- conflicting messages
- health consequences

Non-UK systematic review level evidence highlighted additional aspects including suggestions for general content of healthy weight guidelines as well as the potential importance of message tailoring. These aspects should be considered alongside the 6 conceptual themes to aid the drafting of messages about maintaining a healthy weight or preventing excess weight gain.

5.1 Key points

The most acceptable message may not be the most effective message at motivating compliance or stimulating behaviour change. Gray *et al.* 2008 (++) observed this phenomena indicating a disparity between the terms adults who were overweight or obese found most acceptable and those they reported were most likely to motivate weight loss. Assessing the effectiveness of message content on behaviour change or motivation was outside the scope of this review, but a combined approach of acceptability, motivation and behaviour change effectiveness may be a useful addition to future research.

We need to treat the findings with caution. For example, we cautiously indicate in Evidence Statement 5 that, “some people thought shock tactics could be effective for stimulating behaviour change whereas others viewed them as “emotional blackmail” or “propaganda””. However, there is evidence

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from other sources outside of the scope of our review that “hard hitting” statements and stigmatisation are not effective and may reinforce weight gain related behaviours (Puhl 2013, Vartinanian and Smyth 2013). This serves to highlight 2 issues. Firstly, the scope of our review was relatively narrow and excluded primary research from non-UK sources that may have provided contradictory evidence and led to different conclusions and themes. Secondly, there may be differences between what individuals think may be effective and what evidence tells us actually is effective. So caution is advised when interpreting views expressed in this way.

Some parents from Bangladeshi, Pakistani and Black African families felt that sedentary shared activities such as going to Church or helping with homework were more important than exercise (Department of Health 2008 [+]). This may present challenges for those developing relevant and appropriate physical activity messages for people sharing this view. It also shows the potential importance of understanding and considering not just what people think of individual messages but also how people regard the target behaviours in the round. For example, whether they conflict with cultural practices or preferences.

Some of the suggestions relating to language and message framing, such as building empathy and self-esteem through positive messages (NHS Somerset 2011 [+]), have broad parallels with self-determination theory and motivational interviewing. Further work may benefit from systematically mapping acceptable messages to theories of behaviour change or motivation.

Given the insight gained from the message proposition testing research (Department of Health 2008 [+]) it seems clear that one way for message developers to improve acceptability could be to test messages on a representative sample of their target audience. A second could be to collaborate with communications or media professionals (Boylan *et al.* 2012 [+]).

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Obese and overweight men in 1 study argued that BMI was an inaccurate measure of weight status (Gray *et al.* 2008 [++]). This may be a common observation among the public, particularly among men who may have heard they can technically be overweight or obese due to large muscle bulk rather than fat mass. Men from this study were largely unmotivated to lose weight so they may have been discounting BMI to reduce the dissonance between their perception of their own weight status and the potentially negative labels of overweight or obese. This highlights the possibility that people's views on acceptability may be heavily reliant on their current perspective, weight status and motivation to change behaviour or comply with the message. This potentially limits the transferability of some study findings to other contexts with different underlying perspectives.

Theoretically, the idea of message tailoring may conflict with the idea that it is beneficial to have consistent messages (discussed in section 4.6 on conflicting messages). So creating multiple tailored messages may increase the perception that messages are not consistent, and may risk confusing the public about which messages are the most important.

Few studies were identified that looked specifically at the modifiable behaviours initially outlined in Appendix A section 8. The evidence base tended to discuss broad aspects of diet, physical activity or weight status.

Our review found evidence that the term "obesity" was negatively perceived by some and motivational for others (young people when used by a health professional). However, the evidence did not provide a clear steer on whether to include or exclude the term in healthy weight communications so this decision remains ambiguous. Piggin and Lee 2011 provides relevant contextual reading as it examined the decision to omit the term "obesity" in the UK Change4Life campaign. It examined evidence, which included the Department of Health 2008 consumer insight report included in our review, and questioned whether avoiding the term was justified. A second contextually relevant study that failed to meet our inclusion criteria (it was a non-UK

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primary study) was Puhl 2013. It investigated public perceptions of obesity-related public health media campaigns and found adults responded most favourably to messages involving themes of increased fruit and vegetable consumption, and general messages involving multiple health behaviours. It also found messages deemed stigmatising received the most negative ratings and the lowest intentions to comply with message content. These were themes not explicitly present in the literature we reviewed. Feeding into the terminology evidence, it reported messages perceived to be most positive and motivating made no mention of the word 'obesity' at all, and instead focused on making healthy behavioural changes without reference to body weight (Puhl 2013).

Our review and the evidence it included appeared to addresses only half of the dual process model, which suggests that health behaviour change can be brought about through deliberative processing or more automatic processes. The deliberate element assumes message recipients see or hear communications, process them consciously, develop an intention or motivation and then change behaviour because of it. In the automatic process, participants are not aware of their response to certain messages and cannot plan their behaviour accordingly. Gathering views from focus groups would seemingly tap into the conscious deliberate interpretations, especially if participants were asked to image how they would react, rather than how they had reacted, to different messages.

5.2 Limitations

The review set out to identify views from unselected members of the general population - a mix of underweight, healthy weight, overweight or obese weight status. However, due to the small UK relevant evidence base initially identified, reports were subsequently included that sampled views only from overweight or obese populations which potentially limits their applicability to the wider population, unselected for weight status.

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We advise general caution in interpreting the results of this review because some of the influential studies were not peer reviewed (Department of Health 2008, Newlove and Crawshaw 2009, Marno 2011 and NHS Somerset 2011); the evidence base producing the themes was small, and often not mutually reinforcing between studies. The specific context of the studies also potentially limits the transferability of their findings to other contexts and potentially reduces their applicability to the general UK population unselected for weight status.

Furthermore, the non-peer reviewed consumer insight study (Department of Health 2008 [+]) held particular prominence in our review contributing to 4 of the 6 emergent themes from primary studies. Hence, the influence of this piece of work, including its potential biases, limitations and transferability issues, is significant within the context of our review.

The thematic analysis used in this review means the evidence summarised within each conceptual theme is indicative of areas for consideration, but does not represent a definitive or comprehensive explanation of all known dimensions of healthy weight message acceptability.

Only a small number of relevant UK primary studies were identified so we cannot assume, and we do not believe, we have identified the full breath of themes relevant to developing acceptable messages about maintaining a healthy weight or preventing excess weight gain. This appears to reflect a genuine paucity of relevant primary UK research on the topic.

The breadth and depth of included evidence may have been improved through the inclusion of non-UK primary research; however, applicability to the UK setting was a potential limitation to consider in this approach. Our review targeted UK primary research first based on the assumption that healthy weight message acceptability varies between social and cultural contexts. We included non-UK reviews because the UK primary evidence base was small, partially addressing this limitation.

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Alternatively, views from more developed health behaviour research fields, such as smoking, could have been sourced to look for transferable concepts to healthy weight. This may have identified themes of acceptability that were similar across health behaviours, or highlight those unique to health weight. It may have been advantageous to include both quantitative and qualitative work in this review to dually assess message acceptability and effectiveness. However, this work was to support a partial update of current UK healthy weight guidelines so the scope was deliberately narrow to increase transferability and relevance of the findings to this specific and practical context.

Further limitations relate to the context in which messages were delivered, which could influence perceptions of acceptability. For example, 3 studies discussed views on acceptability in the context of an interaction between a person and a health care professional (Tailor and Ogden 2009 [+] Marno 2011 [+], NHS Somerset 2011 [+]) and 1 considered acceptable terms used in general conversation and when used by a health professional (Gray *et al.* 2008 [++]). Most participants in Gray *et al.* 2008 (++) suggested they would respond differently to weight-related terms used socially compared to encounters with health professionals. This indicates added caution is needed before generalising views relating to acceptable communication with a health professional to other contexts.

Many of the included studies sampled their views through focus groups, which have inherent advantages and disadvantages. As the report from NHS Somerset (+) indicated, an advantage of using focus groups is that they allow the exploration of issues in more depth than a questionnaire approach, people may be prompted by recollections of other members in the group, and they are more conversational in nature. Disadvantages are that they may involve small numbers of people, people may feel inhibited by others in the group, and it may be difficult to assess how representative views are of the wider population.

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5.3 Evidence gaps

Evidence gaps cited in the primary research:

- Further research is needed to explore the direct links between language used and behaviour before any universal rules about the doctor's use of language can be made (Tailor and Ogden 2009).
- Further research should seek the ideas and opinions of parents regarding the best methods for guiding the public towards appropriate portion sizes for children. Furthermore, that additional research in larger and more diverse samples would be desirable (Croker *et al.* 2009).
- Department of Health is exploring the need for further research to inform understanding of diet and activity levels among teenagers and adults and identify communication strategies that are most effective in encouraging the uptake of targeted interventions for obese and overweight children (Department of Health 2008).
- Future studies should focus on interactions between clinicians and their patients (Gray *et al.* 2011).

Further evidence gaps identified by the review authors:

- Further studies should investigate both what is communicated (content of the message) and how it is communicated (the style, tone, language etc.).
- Further work may benefit from aligning work on acceptable communication with current theories of behaviour change and motivation. It may also focus on a broader definition of message effectiveness to identify similarities or differences depending on the aim of the message (acceptability, increasingly motivation, behaviour change, or all three).
- Further work should seek the views of children and young people as well as men who appeared underrepresented in the current UK evidence base.
- Further research should assess the acceptability and practicality of tailoring messages to demographic characteristics, underlying motivation to change behaviour, and/or other factors amendable to tailoring.

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6 Conclusions

From 7 UK primary research studies 6 emergent themes influencing the acceptability of messages about maintaining a healthy weight or preventing weight gain were identified:

- language
- message framing
- attitudes to receiving more information
- combined messages
- conflicting messages
- health consequences

Additional relevant themes described only in the non-UK systematic reviews included:

- Message Tailoring
- Specific guideline content

As the evidence base of UK studies was small and of varying relevance to the review question, there was limited evidence on which to base solid, prescriptive message writing advice.

Nonetheless, it may be beneficial to those developing messages about maintaining a healthy weight or preventing excess weight gain to systematically consider each of the themes identified above, and in the evidence statements, for areas that will likely influence acceptability. The narrative summaries expand on the evidence statements so typically contain more practical message development suggestions to consider.

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8 Appendix A: Modifiable behaviours

Table 3: Individually modifiable factors/behaviours targeted by the evidence review

Food and drinks	Energy and nutrients	Eating Patterns	Physical activity and exercise	Sedentary behaviour	Other factors
Drinks: • Sugar sweetened drinks • Fruit juice • Water • Alcohol – wine, beer, spirits • Tea and coffee • Artificially sweetened beverages • Low-calorie drinks/Low-sugar drinks/ Sugar-reduced-drinks	Fat / protein / carbohydrate	Eating speed/rate	Active leisure / recreation	Amount of sedentary time	Sleep (amount and quality)
High energy dense foods	Glycaemic index/glycaemic load	Eating/meal/snack frequency (eating occasions)	Activities of daily living (e.g. housework, garden, DIY)	Sitting	Monitoring – weight, waist, clothes fit, pedometers, food diaries
(Low) energy dense	Fibre	Eating pattern -	Incidental physical	Standing	Over holiday /

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Food and drinks	Energy and nutrients	Eating Patterns	Physical activity and exercise	Sedentary behaviour	Other factors
foods		consistency, weekend vs. weekdays, energy intake split / timing through the day	activity-(active habits) egg stairs		Christmas weight gain (i.e. related to change in behaviour over holidays)
Whole grain	Calorie control (watching what you eat)	Setting or distractions (egg table vs. TV viewing)	Walking (including steps – travel or leisure)	TV and other screen - time, eating and viewing, displaced activity	Stress minimising activities
Refined grains	Energy density	Family meal (+eating with children)	Sport	Other sedentary activities – reading/commuting	Support e.g. partner, social support, buddy
Fruit and vegetables	Artificial sweeteners	Portion size	Active play (e.g. after school)	Breaks in sedentary time (e.g. workplace breaks such as meeting breaks, walking breaks)	Avoiding screen advertising (e.g. advert free versus advert containing viewing)
Meat and fish	Sugar, high fructose corn syrup, sucrose, glucose	Snacking / snacks	Active travel/commuting	More active screen time (active versus passive gaming)	
Milk and other dairy	Caffeine/ catechins (linked to green tea effects)	Grazing/ gorging	Cycling (travel or leisure)		
Nuts/legumes		Eating out	Strength /aerobic		

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Food and drinks	Energy and nutrients	Eating Patterns	Physical activity and exercise	Sedentary behaviour	Other factors
Dietary pattern – specific combination of foods measured using diet index (e.g. healthy eating index; Mediterranean diet index; DASH diet, etc.) or derived from data (e.g. principal component analysis - Western/Prudent/ Traditional/Junk)		Take away meals/fast food	Intensity, time, frequency (total volume) Intensity (same volume, high intensity vs. low intensity)		
Vegan / vegetarian		Meal planning			
		Meal skipping (including breakfast skipping)			
		Drinks with meals			
		Breakfast			

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9 Appendix B: Sample search strategy

MEDLINE search strategy

The MEDLINE search strategy prioritised the use of key general and specific indexing terms as well as key free text terms, because there is a risk that relevant records could be indexed in different ways with a wide variety of potential MeSH terms (or not indexed at all). The search includes the McMaster filter for qualitative studies and a UK studies filter that was developed by NICE.

1 exp Obesity/ (132496)
2 Overweight/ (10643)
3 Weight Gain/ (21619)
4 Ideal Body Weight/ (107)
5 ((prevent* or reduc* or tackl* or address*) adj5 (obes* or "weight gain" or "excess weight" or overweight)).ti,ab. (18560)
6 ((maintain* or maintenance or prevent* or reduc* or control* or manag* or monitor* or healthy or normal or average) and (weight or bmi or body mass index or body fat or waist circumference or adiposity)).ti,ab. (395804)
7 (non obese or nonobese or non overweight or nonoverweight).ti,ab. (13029)
8 1 or 2 or 3 or 4 or 5 or 6 or 7 (501901)
9 Health Promotion/ (50636)
10 Health Behavior/ (31742)
11 Health Education/ (50933)
12 Health Communication/ (482)
13 Information Dissemination/ (9571)
14 Marketing of Health Services/ (13847)
15 Risk Reduction Behavior/ (6678)
16 (promot* or advert* or marketing or program* or campaign* or scheme* or initiative* or strateg* or communicat* or messag*).ti,ab. (1839581)
17 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 (1923200)
18 8 and 17 (67425)
19 Health Knowledge, Attitudes, Practice/ (68777)
20 belief*.tw. (48876)
21 interview$.mp. (237037)
22 experience$.mp. (669678)
23 qualitative.tw. (115933)
24 19 or 20 or 21 or 22 or 23 (1017617)
25 18 and 24 (7525)
26 exp Great Britain/ (291049)
27 (britain$ or "united kingdom$" or uk or england$ or northern ireland$ or wales$ or scotland$).tw,in. (936233)

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28 (british or english or scottish or welsh or northern irish).tw,in. (156655)
29 (london$ or birmingham$ or leeds$ or glasgow$ or sheffield$ or edinburg$ or liverpool$ or manchester$ or bristol$ or belfast$ or cardiff$ or nottingham$ or newcastle$).tw,in. (667882)
30 ("national health service" or nhs).tw,in. (84122)
31 ("primary care trust$" or "primary care group$" or pct$ or pcg$).tw,in. (10590)
32 foundation trust$.tw,in. (11039)
33 ("strategic health authorit$" or sha).tw,in. (1568)
34 local authorit$.tw,in. (1874)
35 "commissioning group$".tw,in. (113)
36 acute trust$.tw,in. (216)
37 mental health trust$.tw,in. (347)
38 care trust$.tw. (1302)
39 hospital trust$.tw,in. (2407)
40 teaching hospital$.tw,in. (46984)
41 university hospital$.tw,in. (402726)
42 british$.jn. (417744)
43 nice.tw. (4341)
44 (national adj institute adj2 health adj2 clinical adj excellence).tw. (1059)
45 (national adj institute adj2 health adj2 care adj excellence).tw. (51)
46 (national adj health adj service$).ti. (1992)
47 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 (2132610)
48 25 and 47 (1121)
49 limit 48 to (english language and yr="2000 -Current") (958)

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10 Appendix C: Sifting protocol

Parameters	Sifting criteria	Additional comments
Question that will be covered	What are the views of people in the UK about the acceptability of messages about individually modifiable behaviours (i.e. individual responsibility) to help maintain a healthy weight or prevent excess weight gain, for example regarding message framing and language?	The focus of the review is on acceptability, in particular, as it relates to the message content, rather the process of delivering the messages e.g. route/context. However, if these other issues are mentioned this will be noted in the review. The content facet of message acceptability may include issues around: • gain-framing (e.g. "you will maintain a healthy weight") vs. loss-framing (e.g. "you will become obese") • uptake messages (i.e. increase behaviour X) vs. reduction messages (i.e. stop behaviour Y) • wording around weight – whether to mention or not, how to describe – weight maintenance, preventing weight gain, preventing overweight/obesity Parental views of acceptability of messages relating to behaviour of younger children will be assessed as well as acceptability to the child. Records that do not address or contribute to the main research criteria will be excluded and tagged "Wrong Question" at second title and abstract and full text sift.
Messages that will be covered	Messages for populations (or population subgroups) in the UK relating to individually modifiable behaviours that aim to help children, young people and adults to maintain a healthy weight or	Messages should pertain to an action that an individual can choose to perform themselves, rather than one requiring external intervention. Messages may pertain to the

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Parameters	Sifting criteria	Additional comments
	prevent excess weight gain	general areas of: diet, physical activity, sedentary behaviour, or the specific areas mentioned in Table 1, rather than to a specific factor. That is, studies addressing acceptability of messages in these lifestyle areas will be eligible for inclusion, without needing to mention specific factors. NB Studies that include exclusively individuals who are overweight or obese will not be sifted out in the initial stages of the review. In the second sift the numbers of potentially relevant studies in: • unselected members of the general population • overweight/obese individuals • specific population subgroups will be assessed, and discussed with NICE to determine the appropriate approach.
Messages that will not be covered	Messages pertaining to: Very low calorie diets Environmental factors beyond people's control (for example, the provision of cycle paths or content of school meals). Programmes, services or treatments for people who are overweight or obese (including lifestyle weight management services and pharmacological or surgical treatments). Management of medical conditions that may increase the risk of excess weight gain, being overweight or obese. Programmes, services or treatments for people who are underweight. Infant feeding (with breast milk or infant formula) and weaning.	Records excluded on these criteria will be tagged 'wrong intervention/exposure' at second title and abstract and full text sift. Relevant qualitative studies of message acceptability in the following settings will also be considered for inclusion: – The NHS – Local authorities and partners in the community – Early years settings – Schools – Workplaces – Self-help, commercial and community programmes They will be included at first and second sift, and an appropriate

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Parameters	Sifting criteria	Additional comments
	Complementary/non-mainstream therapies to prevent someone from becoming overweight or obese or to manage these conditions (for example, acupuncture, hypnotherapy, medicinal plants). Defining 'overweight' and 'obese'. Related activities to combat obesity that are covered by other NICE guidance (such as breastfeeding). Working circumstances e.g. shift working Smoking	approach to these studies determined at that stage, based on discussion with NICE about the volume of studies identified.
Populations (groups) that will be covered	All adults and children. The focus is on the general population (i.e. mixed populations).	Studies specifically in selected population subgroups, e.g.: – pregnant women – post-pregnancy – learning difficulties – mental health conditions – disabilities and also studies in overweight and obese individuals will be included at first and second sift, and an appropriate approach to these studies determined at that stage, based on discussion with NICE about the volume of studies identified. They may be included if there is no evidence available for the general public as a whole.
Populations (groups) that will not be covered	Non-UK populations Infants who have not been weaned	Records excluded on this criterion will be tagged 'wrong population' at second title and abstract and full text sift. (Weaning or 'complementary feeding' is the transition from an exclusively milk-based diet to a diet based on solid foods.)

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Parameters	Sifting criteria	Additional comments
Study types/designs to be included	Qualitative studies (e.g. focus groups, interviews)	NB The qualitative search filter used will not exclude studies based on their design. The focus of this review will be primary studies (if possible). Any potentially relevant reviews will be left in during the first sift, and tagged as reviews during the second sift, in case only limited primary studies are identified. In addition, a search for systematic reviews of qualitative studies on the question of interest (not specifically UK focused) will be carried out, and results kept as a backup in case only very few UK studies are identified.
Studies types/designs that will not be included	Any studies that are not qualitative studies e.g. Systematic and non-systematic reviews of non-qualitative studies Letters Animal studies Editorials	Records excluded for on this criteria will be tagged 'wrong study design (WSD) at second title and abstract and full text sift.
Study types/designs to be included	Studies published before 2000 Non-English language studies Citations without an abstract	Records excluded for on this criteria will be tagged 'wrong study type' (WST) at second title and abstract and full text sift.

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11 Appendix D: List of excluded studies

The following literature was excluded at full text review. Studies are grouped by common exclusion code.

Wrong exposure or intervention

Kelly CN, Stanner SA. Diet and cardiovascular disease in the UK: are the messages getting across? The Proceedings of the Nutrition Society. 2003;62(3):583-9.

Lakshman R, Landsbaugh JR, Schiff A *et al.* Developing a programme for healthy growth and nutrition during infancy: understanding user perspectives. Child: Care, Health & Development. 2012;38(5):675-82.

Trigwell J, Watson W, Murphy R *et al.* Addressing childhood obesity in black and racial minority populations in Liverpool. Liverpool: University of Liverpool; 2011. Available from: http://www.liv.ac.uk/media/livacuk/instituteofpsychology/docs/Childhood_Obesity_in_BRM_Groups_-_Project_Report_April_2011_.pdf

Visram S, Crosland A, Cording H. Triggers for weight gain and loss among participants in a primary care-based intervention. British Journal of Community Nursing. 2009;14(11):495-501.

Wrong population

Lindhardt CL, Rubak S, Mogensen O *et al.* The experience of pregnant women with a body mass index >30 kg/m2 of their encounters with healthcare professionals. Acta Obstetricia et Gynecologica Scandinavica. 2013;92(9):1101-7.

Swift JA, Choi E, Puhl RM *et al.* Talking about obesity with clients: Preferred terms and communication styles of UK pre-registration dieticians, doctors, and nurses. Patient Education and Counseling. 2013;.91(2).

Wrong question

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Cavill N, Bauman A. Changing the way people think about health-enhancing physical activity: do mass media campaigns have a role? Journal of Sports Sciences. 2004;22(8):771-90.

Chambers SA, Lobb AE, Butler LT *et al.* Attitudes and behaviour towards healthy eating: Focus groups. Reading: University of Reading; 2007. Available from: www.esrc.ac.uk/my-esrc/grants/RES-224-25-0073/outputs/Download/413d3a8e-bd8e-429d-b951-f53149822429

Croker H, Lucas R, Wardle J. Cluster-randomised trial to evaluate the 'Change for Life' mass media/ social marketing campaign in the UK. BMC Public Health. 2012;12:404.

De BA, McCarthy M, McKenzie K *et al.* Weight stigma and narrative resistance evident in online discussions of obesity. Appetite. 2014;72:73-81.

Department of Health. Change4Life marketing strategy: In support of Healthy Weight, Healthy Lifes. London: Department of Health; 2009. Available from: http://www.nhs.uk/change4life/supporter-resources/downloads/change4life_marketing%20strategy_april09.pdf

Department of Health. Change4life one year on: In support of Healthy Weight, Healthy Lifes. London: Department of Health; 2010. Available from: http://www.physicalactivityandnutritionwales.org.uk/Documents/740/DH_summaryof_change4lifeoneyearon.pdf

Department of Health. Healthy Lives, Healthy People: update and way forward. London: Department of Health; 2011. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216142/dh_129334.pdf

Evans J. Understanding policy: why health education policy is important and why it does not appear to work, IN British Educational Research Journal, Vol 39 No 2 Apr 2013. British Educational Research Journal. 2013;39(2).

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Fielden AL, Sillence E, Little L. Children's understandings' of obesity, a thematic analysis. International Journal of Qualitative Studies on Health and Well-being. 2011;6(3).

Fox KR. Understanding the World of the "Fat Kid": Can Schools Help Provide a Better Experience? Reclaiming Children and Youth. 2000;9(3):177-81.

Furber CM, McGowan L. A qualitative study of the experiences of women who are obese and pregnant in the UK. Midwifery. 2011;27(4):437-44.

Furness PJ, McSeveny K, Arden MA *et al.* Maternal obesity support services: a qualitative study of the perspectives of women and midwives. BMC Pregnancy & Childbirth. 2011;11:69.

Herbert G, Butler L, Kennedy O *et al.* Young UK adults and the 5 A DAY campaign: perceived benefits and barriers of eating more fruits and vegetables. International Journal of Consumer Studies. 2010;34:657-64.

Horne M, Skelton D, Speed S *et al.* The influence of primary health care professionals in encouraging exercise and physical activity uptake among White and South Asian older adults: experiences of young older adults. Patient Education & Counseling. 2010;78(1):97-103.

Liu J, Davidson E, Bhopal R *et al.* Adapting health promotion interventions to meet the needs of ethnic minority groups: mixed-methods evidence synthesis. Health Technology Assessment (Winchester, England). 2014;16(44):1-469.

McVittie C, Hepworth J, Schilling B. The Select Committee Report on Obesity (2004): The significant omission of parental views of their children's eating. Critical Public Health. 2008;18(1).

O'Key V, Hugh-Jones S. I don't need anybody to tell me what I should be doing'. A discursive analysis of maternal accounts of (mis)trust of healthy eating information. Appetite. 2010;54(3):524-32.

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Rees R, Oliver K, Woodman J *et al.* The views of young children in the UK about obesity, body size, shape and weight: a systematic review. BMC Public Health. 2011;11:188.

Rocket Science UK Ltd. Healthy Weight Communities programme evaluation. Edinburgh: Scottish Government; 2011. Available from: http://www.scotland.gov.uk/Resource/Doc/355409/0120032.pdf

Turner KM, Salisbury C, Shield JPH. Parents' views and experiences of childhood obesity management in primary care: a qualitative study. Family Practice. 2011;29(4):476-81.

Williams B, Bhaumik C, Brickell E. Lifecourse Tracker survey: wave 2 report. London: Department of Health; 2013. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/251802/Lifecourse_Tracker_survey_Wave_2_Report_final.pdf

Wrong study type

Cale L, Harris J. 'Every child (of every size) matters' in physical education! Physical education's role in childhood obesity. Sport, Education and Society. 2013;.18(4).

Lucas A, Murray E, Kinra S. Heath beliefs of UK South Asians related to lifestyle diseases: a review of qualitative literature. Journal of Obesity. 2013;2013:827674.

Mitchell S. Change4Life: Three year social marketing strategy. London: Department of Health; 2011. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213719/dh_130488.pdf

Piggin J, Lee J. 'Don't mention obesity': contradictions and tensions in the UK Change4Life health promotion campaign. Journal of Health Psychology. 2011;16(8):1151-64.

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PoHefa. A summary of findings from the review of global academic research into raising the issue of weight and improving effectiveness of interventions. Luxembourg: European Commission; Executive Agency for Health and Consumers; 2011. Available from: http://www.pohefa.eu/Portals/27/UK_01_Literature%20review.pdf

Robertson R. Using information to promote healthy behaviours. London: King's Fund; 2008. Available from: http://www.kingsfund.org.uk/sites/files/kf/field/field_document/information-promote-healthy-behaviours-kicking-bad-habits-supporting-paper-ruth-robertson.pdf

12 Appendix E: Evidence tables

See separate document

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