

Mass Media for Public Health Messages: Reviews of the Evidence

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Abstract

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Background: Mass media campaigns can be used to communicate public health messages at the population level. Although previous research has shown that they can influence health behaviours in some contexts, there have been few attempts to synthesise evidence across multiple health behaviours.

Objectives: To: review evidence on the effective use of mass media in six health topic areas (alcohol, diet, illicit drugs, physical activity, sexual and reproductive health, and tobacco); examine whether effectiveness varies with different target populations; identify characteristics of mass media campaigns associated with effectiveness; and identify key research gaps.

Design: (A) A systematic review of reviews; (B) a review of primary studies examining alcohol mass media campaigns; (C) a review of cost-effectiveness evidence; (D) a review of recent primary studies of mass media campaigns conducted in the UK. A logic model was developed to inform the reviews. Public engagement activities were conducted with policy, practitioner and academic stakeholders and with young people.

Results: The amount and strength of evidence varies across the six topics, and there was little evidence regarding diet campaigns. There was moderate evidence that mass media campaigns can reduce sedentary behaviour and influence sexual health-related behaviours and treatment-seeking behaviours (eg. use of smoking quitlines and sexual health services). Impact on tobacco use and physical activity was mixed, there was limited evidence of impact on alcohol use and no impact on illicit drug behaviours. Mass media campaigns were found to increase knowledge and awareness across several topics, and to influence intentions regarding physical activity and smoking. Tobacco and illicit drug campaigns appeared to be more effective for young people and children but there was no or inconsistent evidence regarding effectiveness by gender, ethnicity or socio-economic status. There was moderate evidence that tobacco mass media campaigns are cost-effective, but weak or limited evidence in other topic areas.

Although there was limited evidence on characteristics associated with effectiveness, longer or greater intensity campaigns were found to be more effective, and messages were important, with positive and negative messages and social norms messages affecting smoking behaviour. The evidence suggested that targeting messages to target audiences can be effective. There was little evidence from regarding the role that theory or media channels may play in campaign effectiveness, and also limited evidence on new media.

Limitations: Statistical synthesis was not possible due to considerable heterogeneity across reviews and studies. The focus on review-level evidence limited our ability to examine intervention characteristics in detail.

Conclusions: Overall the evidence is mixed but suggests that: campaigns can reduce sedentary behaviour, improve sexual health and contribute to smoking cessation; tobacco control campaigns can be cost-effective; longer and more intensive campaigns are likely to be more effective; message design and targeting campaigns to particular population groups can be effective.

Future work: Future work could fill evidence gaps regarding diet mass media campaigns and new media campaigns, examine cost-effectiveness in areas other than tobacco, and

explore the specific contribution of mass media campaigns to multi-component interventions and how local, regional and national campaigns can work together.

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Study registration

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List of abbreviations

A&HCI Arts & Humanities Citation Index

AIDS acquired immunodeficiency syndrome

AOR adjusted odds ratio

ASSIA Applied Social Sciences Index and Abstracts

BKCI-SSH Book Citation Index– Social Sciences & Humanities

CASP Critical Appraisal Skills Programme

CDSR Cochrane Database of Systematic Reviews

CEA cost-effectiveness analysis

CI confidence interval

CINAHL Cumulative Index to Nursing and Allied Health Literature

CLARHC Collaboration for Leadership in Applied Health Research and Care

COI Central Office of Information

CPCI-SSH Conference Proceedings Citation Index- Social Science & Humanities

CSO Chief Scientist's Office

CUA cost-utility analysis

CVD cardiovascular disease

DALY disability-adjusted life-year

DARE Database of Abstracts of Reviews of Effects

DoPHER Database of Promoting Health Effectiveness Reviews

DR discount rate

EPHPP Effective Public Health Practice Project

EPPI Evidence for Policy and Practice Information and Co-ordinating Centre

ERIC Education Resources Information Center

ESCI Emerging Sources Citation Index

GRADE Grading of Recommendations, Assessment, Development and Evaluation

HDA Health Development Agency

HEBS Health Education Board for Scotland

HIV human immunodeficiency virus

HOE hierarchy of effects

HTA Health Technology Assessment
ICER incremental cost-effectiveness ratio
LMIC low- and middle-income country/ies
LYG life years gained
MET-h metabolic equivalent of task hours
MSM men who have sex with men
NCDs non-communicable diseases
NHS National Health Service (UK)
NICE National Institute for Health and Care Excellence (UK)
NIHR National Institute for Health Research
NIHR PHR National Institute for Health Research Public Health Research programme
NRT nicotine replacement therapy
NST non-systematic review
OECD Organisation for Economic Co-operation and Development
OR odds ratio
PI primary investigator
PPI public and patient involvement
PROGRESS Place of residence; Race/ethnicity/culture/language; Occupation; Gender/sex;
Religion; Education; Socioeconomic status; Social capital
PROSPERO International prospective register of systematic reviews
QALY quality-adjusted life-year
QR codes quick response codes
RCTs randomised control trials
ROBIS Risk of Bias in Systematic Reviews
RR relative risk
SES socio-economic status
SMD standardised mean difference
SMS short message service
SR systematic review
SSCI Social Sciences Citation Index
STD sexually transmitted disease(s)
UKCTAS UK Centre for Tobacco and Alcohol Studies

WHO World Health Organization

Plain English summary

Mass media including television, radio, social media, newspapers and other media can be used to communicate health messages. This study reviewed the literature on media campaigns about alcohol, diet, illegal drugs, physical activity, sexual health, and tobacco use. Reviews were carried out informed by a logic model (a framework for understanding how change can take place) of how mass media might improve health. The study aimed to provide evidence on how best to communicate public health messages through mass media. Our approach and our findings were discussed with members of the public and others interested in this topic.

Four literature reviews were carried out. One looked at reviews on the six health topics (Review A). Another looked at single studies on alcohol campaigns as no previous review had been carried out (Review B). A third focused on whether campaigns were value for money (Review C). We then reviewed recent UK studies on the six topics (Review D).

Mass media campaigns for public health messages can work, but the evidence is mixed. The largest amount of existing knowledge is for tobacco control campaigns followed by sexual health and physical activity. Campaigns may not be able to directly change behaviour. However, they can improve knowledge and awareness. They can also contribute to people accessing services, like smoking quitlines or sexual health clinics. Targeting messages in campaigns to particular groups, such as children and young people, may be a good approach. We found some evidence that tobacco control campaigns can be good value for money but little information on this for other topics. What makes a particular campaign work is unclear, but those that are run for longer or more often may work better. Gaps in the existing knowledge remain, including the need for a future review bringing together the evidence on mass media to improve diet.

Word count: 304

Scientific summary

Background

Mass media such as radio, television, newspapers and digital, social and mobile media, can be used to communicate public health messages at the population level, potentially reaching many more people than other interventions. Communication through mass media involves not just the receipt of information but also a two-way interactive process where change occurs when people choose to engage with the public health messages they receive. Health behaviours including smoking, alcohol use, poor diet and lack of physical activity are the primary preventable causes of non-communicable diseases (NCDs) including cancer, coronary heart disease and stroke. Achieving changes in these behaviours and others is an important component of NCD prevention.

Previous research has shown that mass media communications can result in positive changes in health behaviours across a range of populations. However, effectiveness varies depending on the extent, focus, targeting, theoretical basis, content, source and duration of the campaign, and whether and how the campaign interacts with other interventions and policies.

There have been few attempts to synthesise evidence of the effectiveness of mass media campaigns across multiple health behaviours. An approach which examines intervention effectiveness across several health topic areas is able to offer a broad overview of evidence, and to bring attention to areas where no systematic reviews have been conducted. In addition, for those designing or commissioning mass media campaigns, reviews of the evidence can help to guide decision-making regarding in what contexts and for what behaviours mass media campaigns may be most useful.

Objectives

The aim of the study was to provide the NHS, local authorities, government and other organisations with evidence on the effective use of mass media to communicate public health messages.

The eight objectives were to:

1. Assess the effectiveness of mass media campaigns to communicate public health messages.
2. Examine the components of messages that can be effectively communicated through mass media.
3. Explore how different types and forms of media campaigns can reach and be effective with different target populations (particularly disadvantaged groups).
4. Assess new or emerging evidence about campaigns that employ different forms of media.
5. Examine the relationship between local, regional and national campaigns and evidence of effectiveness where this exists.
6. Assess the extent to which mass media campaigns can interact with other interventions or services to improve health outcomes.
7. Explore the currency, utility and applicability of findings as they emerge with key stakeholders.
8. Identify key research gaps in relation to mass media campaigns to communicate public health messages.

Methods

The study involved a series of reviews of existing literature on mass media for public health messages across six health topics which represent the main preventable risk factors for morbidity and mortality in developed countries: alcohol use, diet, illicit substance use, physical activity, sexual and reproductive health, and tobacco use. It involved five main elements:

- Development of a logic model

- Review of reviews (Review A)
- Review of primary studies examining alcohol mass media campaigns (Review B)
- Rapid review of cost-effectiveness evidence (Review C)
- Review of recent primary studies of mass media campaigns conducted in the UK (Review D).

We developed a logic model with two major components: actions (comprising the intervention inputs, activities and media outcomes); and changes (made up of proximal, intermediate and distal outcomes). We developed initial logic models for each of the topic areas before synthesising these into a common logic model. This model was then discussed with stakeholders and members of the public who helped us refine and develop it further. The resulting logic model informed the reviews by helping us to define inclusion and exclusion criteria, identify moderators and mediating factors, guide the search for evidence, and to reflect on and interpret the evidence.

We searched for systematic reviews of the evidence for the effectiveness of mass media for each of the health topics covered by our study (Review A). We reviewed evidence from English-language systematic reviews published between January 2000 and January 2016 on the effectiveness of mass media campaigns across these six health topics.

No systematic reviews specifically addressing alcohol use or diet met our inclusion criteria. As a result of this, we conducted a systematic review of English-language primary studies, published by July 2016, which assessed the impact of mass media campaigns to reduce alcohol consumption and related harms (Review B). On diet, we conducted a scoping review of primary studies but the volume of literature identified was extensive and beyond study time and resources. Our identification of the absence of a systematic review of mass media campaign on diet contributed to the discussion of future research priorities.

We also conducted a rapid review of mass media cost-effectiveness evidence (Review C). We reviewed systematic and non-systematic reviews, published between January 2000 and January 2017, which assessed economic studies that evaluated both the costs and benefits of mass media campaigns for any of our six health topics.

Finally we conducted a review of English-language primary studies of mass media campaigns targeting the six health topics carried out in the UK and published between January 2011 and September 2016 (Review D). This was conducted to provide additional evidence on campaign characteristics which might be associated with effectiveness which was directly relevant to the current or recent UK context.

Results

Our results aimed to address the overall aim and objectives of the study and are grouped into five main headings:

- the effectiveness and cost-effectiveness of mass media campaigns (Objective 1 and some aspects of Objective 6)
- the effectiveness of mass media campaigns with different target populations (Objective 3)
- the characteristics of mass media campaigns (Objectives 2, 4 and 5)
- responses of stakeholders to our findings (Objective 7)
- research gaps and implications for future research (Objective 8).

How effective are mass media campaigns?

Review A identified 36 reviews, assessed together for the first time in our study. Overall we found that the evidence for the effectiveness of mass media for behaviour change is mixed. The amount of evidence varies across health topics, with most evidence relating to tobacco control campaigns followed by sexual health and physical activity campaigns. No reviews examined mass media campaigns addressing alcohol or diet, although evidence on these was found in reviews examining 'mixed topics' (more than one of our six topics). The strength of evidence from reviews also varies. We found moderate evidence for the positive effects of mass media campaigns on reducing sedentary behaviour and sexual

health-related behaviours such as condom use. The impact of the mass media on tobacco use and physical activity, such as stair use and brisk walking, was mixed, but with some evidence in both cases. In contrast, the available and again low certainty evidence on illicit drugs, suggests no impact of mass media campaigns. There was very limited evidence for effects on diet.

Mass media campaigns may not be able to directly change behaviour in most instances, based on available evidence, but they can affect knowledge and awareness, which our logic model suggests may contribute to longer term outcomes. We found evidence of increased knowledge and awareness in relation to sexual health, physical activity and diet, and increased knowledge and awareness of tobacco risks and services to help quit. There were also positive impacts on intention to increase physical activity, and some evidence of positive impacts on intention to quit smoking. There was mixed evidence on intention to stop the use of illicit drugs, and to use contraception.

Review A also identified 'treatment seeking' as a reported outcome and this is relevant to Objective 6, interaction with other interventions, as it involves a mass media campaign prompting contact with services that could support behaviour change. Here we found evidence that mass media campaigns can prompt calls to smoking quitlines, and may help increase the use of sexual health clinics.

Our findings suggested that the more complex the behaviour, the more difficult it may be for mass media campaigns to have an impact. Of the behaviours that were included in our review, stronger evidence of success in behaviour change was seen for sedentary behaviour and sexual health behaviour (eg. wearing a condom). However, some included reviews suggest that mass media as part of a comprehensive approach to addressing smoking, for example, are likely to be effective and at least one found evidence that tobacco control mass media campaigns may affect attitudes towards smoking and intentions to smoke in young people.

We conducted a new systematic review of alcohol mass media campaigns which included 24 studies (Review B). This found that mass media health campaigns about alcohol are often

recalled by individuals and have achieved changes in knowledge, attitudes and beliefs about alcohol, but there was little evidence of reductions in alcohol consumption.

Review C, which assessed cost-effectiveness in 20 reviews, found moderate evidence that tobacco control mass media campaigns can be cost-effective. There was weak evidence in relation to diet – restricted to salt intake – and physical activity, and no evidence in relation to the cost-effectiveness of sexual health campaigns, despite efforts to identify such evidence within the reviews.

How effective are mass media campaigns with different target populations?

The majority of the reviews included in Review A provided evidence on whether the effects of mass media campaigns were similar or different across sub-populations. We found that mass media campaigns may reach and affect groups in the population differently. Although age differences were not always measured, reviews of tobacco and illicit drug campaigns found mass media appeared to be more effective for young people and particularly younger children than older teenagers. There was modest evidence that mass media outcomes for tobacco, sexual health and physical activity do not differ by gender and no clear consistent evidence was found for ethnicity or socio-economic status. When populations were categorised by baseline health behaviours, there was evidence that physical activity campaigns may be more effective for obese or less active people.

What characteristics of mass media campaigns are associated with effectiveness?

We drew on both Review A and Review D, our review of recent (published 2011-2016) UK primary studies (23 studies), to address this question.

There was limited evidence on the contribution of mass media campaign characteristics to effectiveness, with only a small number of reviews and studies conducting statistical analyses to measure the impact of different characteristics. There was little evidence from either review regarding the role that theory or the media channel may play in campaign effectiveness. However, there was useful evidence on the duration/intensity of

campaigns. Longer duration or greater intensity/exposure were found to be related to effectiveness in several reviews, with most of the evidence relating to tobacco and to a lesser extent sexual health campaigns. Although few reviews/studies specified how long or intense campaigns should be to produce effects, one review (USA/Canada) suggested that advertisements should be aired for a minimum of six months to affect awareness and up to 24 months to impact on behaviours, and as continuously as possible.

There was evidence from both reviews, and particularly from recent UK studies, that the content of messages may be important, with evidence that both positive and negative messages and social norms messages can affect smoking behaviour. There was also evidence that targeting can be effective, suggesting that messages need to be tailored to target audiences while avoiding patronising or stereotyping. There was very limited evidence on new media and how it relates to effectiveness.

How did stakeholders respond to our findings?

We consulted with a range of stakeholders and the public during our study. Near the end of the study we convened a large stakeholder event with around 50 delegates from government, local authorities, the NHS, academia and the public. Delegates who were involved in designing or implementing public health mass media campaigns expected greater and more consistent evidence of effectiveness and cost-effectiveness. Their responses were helpful in reviewing our findings. This was particularly the case for tobacco control campaigns. These have a long history and relevant questions were posed regarding the grey literature, particularly on local and regional campaigns (which our study did not assess) and the relationship between wider tobacco control policies (i.e tax increases, smokefree legislation, advertising bans) which the identified literature did not explore in detail. However, participants welcomed our new systematic review of mass media campaigns on alcohol and some of our key findings relating to intensity/duration and target audience.

In addition, we discussed our findings in detail with two groups of young people attending a youth club in Edinburgh. This was particularly useful in terms of reflecting on their own experience of mass media campaigns. The young people engaged effectively with our logic

model and discussed their recollection and engagement with recent public health mass media campaigns.

Research gaps and implications for future research

We identified a range of research gaps and implications for research:

- The need for a systematic review of mass media campaigns addressing diet
- More rigorous evaluations of mass media campaigns including detailed information on the campaign and exposure.
- More evidence on cost-effectiveness, particularly on topics other than tobacco. Researchers should aim to include cost data and ideally assess cost-effectiveness in future studies.
- More reviews and primary studies which examine digital media, including comparisons with traditional media channels. The uncontrolled and co-created nature of some new media interventions pose particular evaluation challenges which will require the development of new methodologies.
- Better understanding of the specific contribution of mass media campaigns delivered as part of multi-component interventions, including those seeking to influence policy agendas.
- Research to examine how local, regional and national campaigns can work together effectively.

Conclusions

This study brought together the evidence on mass media for public health messages, focusing on six of the main preventable risk factors for NCD, for the first time. Overall the evidence is mixed but suggests that: campaigns can reduce sedentary behaviour and improve sexual health; contribute to smoking cessation particularly through links to wider tobacco control interventions; campaigns can be cost-effective but the main available

evidence is from tobacco control; campaigns that run for longer and are more intensive are likely to be more effective; targeting campaigns to particular population groups can be effective; the messages featured in campaigns can influence outcomes. However, considerable gaps remain in the evidence, particularly on new media, and mass media campaigns to promote healthy diets.

Study registration

This study is registered as PROSPERO [CRD42015029205](#) and PROSPERO [CRD42017054999](#).

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Chapter 1: Introduction

Background and existing research

Behaviour change is crucial to preventing the large burden of non-communicable diseases.^{1,2} Public health organisations recommend, and spend considerable resources, on mass media campaigns to encourage reductions in risky behaviours or adoption of more healthy behaviours (eg.^{1,3-5}). Mass media campaigns can be run via traditional media channels such as television, radio, cinema, newspapers, magazines and billboards, or via new digital media including websites, pop-up and banner ads, QR codes, viral marketing, and social media. New media often feature an element of interactivity (e.g. liking, sharing or commenting on content, downloading campaign apps). Campaigns aim to increase knowledge, influence attitudes and motivate target groups to change health behaviours.⁶ Because they can be delivered at the population level, they can reach large numbers of people at relatively low cost and are widely agreed to have an important role to play in influencing health behaviour change.⁷

Evidence suggests that mass media campaigns can be effective in changing individual health behaviours, for example, for smoking.^{8,9} However, there have been few attempts to synthesise evidence of effectiveness across multiple behaviours. An approach which examines intervention effectiveness across several health topic areas is able to offer a broad overview of evidence, and to bring attention to areas where no systematic reviews have been conducted.¹⁰ Where evidence is scarce or highly heterogeneous (for example, evidence of effectiveness with population subgroups), a broad overview approach allows evidence to be combined more meaningfully. For commissioners, it can help to guide decision-making regarding in what contexts and for what behaviours mass media campaigns may be most useful.

Aims and Objectives

The aim of this research was *to provide the NHS, local authorities, government and other organisations with evidence on the effective use of mass media to communicate public health messages.*

In order to do so, we aimed to systematically review the evidence of effective uses of mass media campaigns to convey messages that lead to health behaviour change in the target audience – either by preventing risky or unhealthy behaviours, by encouraging the cessation of existing risky or unhealthy behaviours promoting the uptake of healthy behaviours or raising awareness of key public health issues.

In addition to our overall aim the study had the following objectives, which were to:

1. Assess the effectiveness of mass media campaigns to communicate public health messages
2. Examine the components of messages that can be effectively communicated through mass media
3. Explore how different types and forms of media campaigns can reach and be effective with different target populations (particularly disadvantaged groups)
4. Assess new or emerging evidence about campaigns that employ different forms of media (including new media)
5. Examine the relationship between local, regional and national campaigns and evidence of effectiveness where this exists
6. Assess the extent to which mass media campaigns can interact with other interventions or services to improve health outcomes
7. Explore the currency, utility and applicability of findings with key stakeholders.
8. Identify key research gaps in relation to mass media campaigns to communicate public health messages.

Most, but not all, of our objectives were addressed in this study, for two reasons. First, because our reviews did not identify evidence to address them. This was the case for Objective 4 where we found very limited evidence on new media and, to some extent, for Objective 5 where some key findings about campaigns of different scope and scale were

available but not enough information applicable to the UK context of local, regional or national was identified. Secondly, it became apparent that some avenues for exploration were beyond the time and resources available for the study once the volume of literature had been initially assessed. This was the case for Objective 6 where it emerged that trying to fully address this objective would have required reviewing a very sizeable additional literature where mass media was just one element of much broader multi-component interventions. These limitations are discussed in Chapter 7.

Overview of the study

The study comprised a series of evidence reviews informed by a logic model. We have been guided in the write-up of this report by the PRISMA statement though,¹¹ as this report documents a large review of reviews combined with syntheses of primary studies, we have needed to develop our own structure to some extent.

i. Review of reviews

Reviews of reviews are becoming an established component in the repertoire of evidence-informed policy and practice.¹²⁻¹⁴ They allow key findings from a range of studies to be accessed easily, while also identifying research gaps. We reviewed and synthesised evidence from English-language systematic reviews published between January 2000 and January 2016 on the effectiveness of mass media campaigns across six health topics which represent the main preventable risk factors for disease morbidity and mortality in developed countries¹⁵: alcohol use, illicit substance use, diet, physical activity, sexual and reproductive health, and tobacco use. We registered this review of reviews (Review A) with PROSPERO ([CRD42013004170](https://www.crd.york.ac.uk/PROSPERO/record/CRD42013004170)).¹⁶ (See Chapters 2 and 5.)

ii. Reviews of primary studies

No systematic reviews addressing alcohol use or diet met our inclusion criteria for the review of reviews described above. As a result of this, and as anticipated in our protocol,¹⁶

we conducted two reviews of primary studies. The first (Review B), a systematic review of English-language primary studies (published by July 2016), was conducted to assess the effectiveness of mass media public health campaigns to reduce alcohol consumption and related harms. Studies examining drink driving mass media interventions and college campus campaigns were excluded. We registered this review with PROSPERO ([CRD42017054999](https://doi.org/10.1111/CRD4.2017054999)).¹⁷ (See Chapter 3.)

The second (Review D) was a systematic review of English-language primary studies of mass media campaigns targeting the same six health topics, conducted in the UK and published between January 2011 and September 2016. The focus of the review was on evidence concerning the characteristics of UK mass media campaigns associated with effectiveness, rather than on the effectiveness of those campaigns per se. (See Chapter 5.)

iii. Other reviews

We conducted a rapid review of reviews describing the cost-effectiveness of mass media campaigns (Review C). We reviewed reviews and systematic reviews, published between January 2000 and January 2017, which assessed economic studies that evaluated both the costs and benefits of mass media campaigns for any of our six health topics of interest. (See Chapter 4.)

As described above, no systematic reviews addressing diet met our inclusion criteria for the review of reviews. A scoping search for English-language primary studies (published by August 2016) was conducted for studies of mass media public health campaigns aiming to improve dietary behaviours. The modified search strategy (diet terms AND mass media terms) was tested in one database (Medline) and identified over 16,500 hits. A full review and synthesis was too great within the time and resources for the current project. Project resources were instead directed towards the review of recent UK primary studies (published between January 2011 and September 2016), referred to above (Review D). We focused on UK studies to compliment the review of reviews (Review A) and enhance the relevance for UK practitioners, policymakers and commissioners. (See Chapter 5.)

The logic model

The utility of logic models in systematic reviews

In a broad systematic review, such as this one, a range of different types of intervention in different contexts are compared and contrasted. Critical to this process is having an understanding of how the different interventions are thought (or intended) to work; this provides a conceptual framework to structure the analysis. Based on the idea of programme theory from the evaluation literature, this framework is often described as a 'logic model', which is a diagrammatic representation of the key intervention inputs, the activities undertaken in the intervention, and the causal pathway which is triggered by the intervention, resulting in the desired (or not desired) outcome(s).¹⁸ Thinking critically about the causal pathway is important in public health interventions, as there are often long chains of outcomes between the intervention and the ultimate health outcome. For example, in this review, a given mass media campaign might be designed to have a given message to raise awareness about the consequences of a given behaviour. It may adopt a given strategy or intervention theory in order to raise awareness, but merely raising awareness does not necessarily result in improved health. The raised awareness needs to result in a decision to change behaviour, the initial behaviour change, and ultimately sustained healthier behaviours may lead to an improvement in population health.

Many systematic reviews develop a logic model a priori, as this can then drive many of the decisions that need to be made during the systematic review process. First, systematic reviewers need to make consistent decisions about which studies are in scope of the review and which are not. The logic model can be used to develop inclusion/exclusion criteria in order to delineate the scope of the review. Once the studies for the review have been identified, the logic model can be used to determine what data need to be extracted about studies in a standardised way, in order to structure the comparative analysis. The logic model then helps to structure the analysis, enabling reviewers to identify commonalities and differences in interventions which may help to explain variance between their results. However, while the existence of an *a priori* logic model can be useful for the reasons given, it should be considered provisional, and subject to change once the studies have been

examined. This is important, because once reviewers have seen the range of studies in their review they may find that the logic model does not contain sufficient nuance to capture significant differences in intervention approach, content or in the contextual factors which might influence intervention implementation – or the long causal chain between intervention and health outcome. For this reason, this review contains two logic models: the first, which informed the early stages of the review, helping reviewers determine what was relevant and irrelevant, and what data should be extracted; the second, which is based on the first, but which also summarises the reviewers' understanding of the research contained within the review.

Development of the initial logic model for mass media interventions

Our initial logic model owes much of its overarching structure to the work of Chen.¹⁹ We split the model into two major components: the action model (comprising the intervention inputs, activities and media outcomes); and the change model (made up of proximal, intermediate and distal outcomes). While this may appear to be rather linear, and not cognisant of relevant theorising about complex interventions (e.g. feedback loops, phase changes and emergent outcomes – see Rogers 2008)²⁰, we consider mass media interventions as operating in different ways to other public health interventions, and it is possible to conceptualise the intervention as a coherent entity that is implemented, and then the outcomes that result from it in a linear way; i.e. there may be feedback loops and other manifestations of complexity within the change model, but these can be understood as operating downstream of the mass media intervention, and not interacting with it.

We first developed our initial logic model for mass media interventions separately for each of the public health areas of the review before synthesising these into a common logic model. As well as demonstrating how mass media interventions may work, the resulting logic model was used to guide the evidence synthesis through helping to define inclusion and exclusion criteria, identify moderators (and potentially sub-group analyses if meta-analyses had been possible at a later stage), identifying mediating factors, and guiding the search for evidence.²¹ Our initial model represents a synthesis of logic models developed independently of mass media interventions of smoking cessation and mass media

interventions of healthy eating/physical activity. In common with the development of logic models more broadly, both logic models were developed through working backwards across an outcome and action chain starting from the distal outcome.

Beginning with smoking cessation, we first located the small number of systematic reviews of mass media interventions for smoking that included a logic model, and used the model included in Niederdeppe and colleagues' review as a starting point.²² This included detail on the change part of a logic model in particular, but was enhanced with further details that helped to disaggregate some of the intermediate outcomes around behaviour change; this corresponded with other models of 'stages of change' in health promotion. The action part of the model was enhanced through examining logic models developed in other studies of mass media interventions of public health but which were not necessarily specific to smoking cessation (for example Huhman *et al.*);²³ as well significant components identified in reviews of mass media smoking interventions, but that were not conceptualised in a logic model (for example Durkin *et al.*).²⁴ Finally, further stages of change of smoking cessation were identified through examining the logic models included in reviews of public health and policy interventions for smoking cessation, but that did not necessarily involve mass media.²⁵ A similar process was employed to develop the logic model for healthy eating/physical activity. To synthesise the models, common components were identified and the language harmonised; for example both the physical activity and smoking cessation logic models included common stages of change around the attempts at adopting healthier behaviours and reduction in unhealthy behaviours as precursors to successful behaviour change, although these were originally expressed in language specific to each health topic. Even though the two health topics included here were chosen because they were conceptually relatively different and could affect very different populations (making them suitable candidates to pilot this approach), their synthesis was relatively straightforward as both involved synthesising logic models of mass media interventions to stimulate behavioural change for lifestyle behaviours. However, as we expected that some of the health topics that the review would consider may be more complex, we expected that our process of synthesising logic models and developing an overall logic model might result in topic-specific pathways being depicted within the final model; for example, mass media interventions for some health-topics might also attempt to change behaviour through an

intermediary party, and this might need to be depicted in the logic model. Thus, presented here is our initial logic model (Figure 1), and it was continually challenged and refined throughout the process of the review.

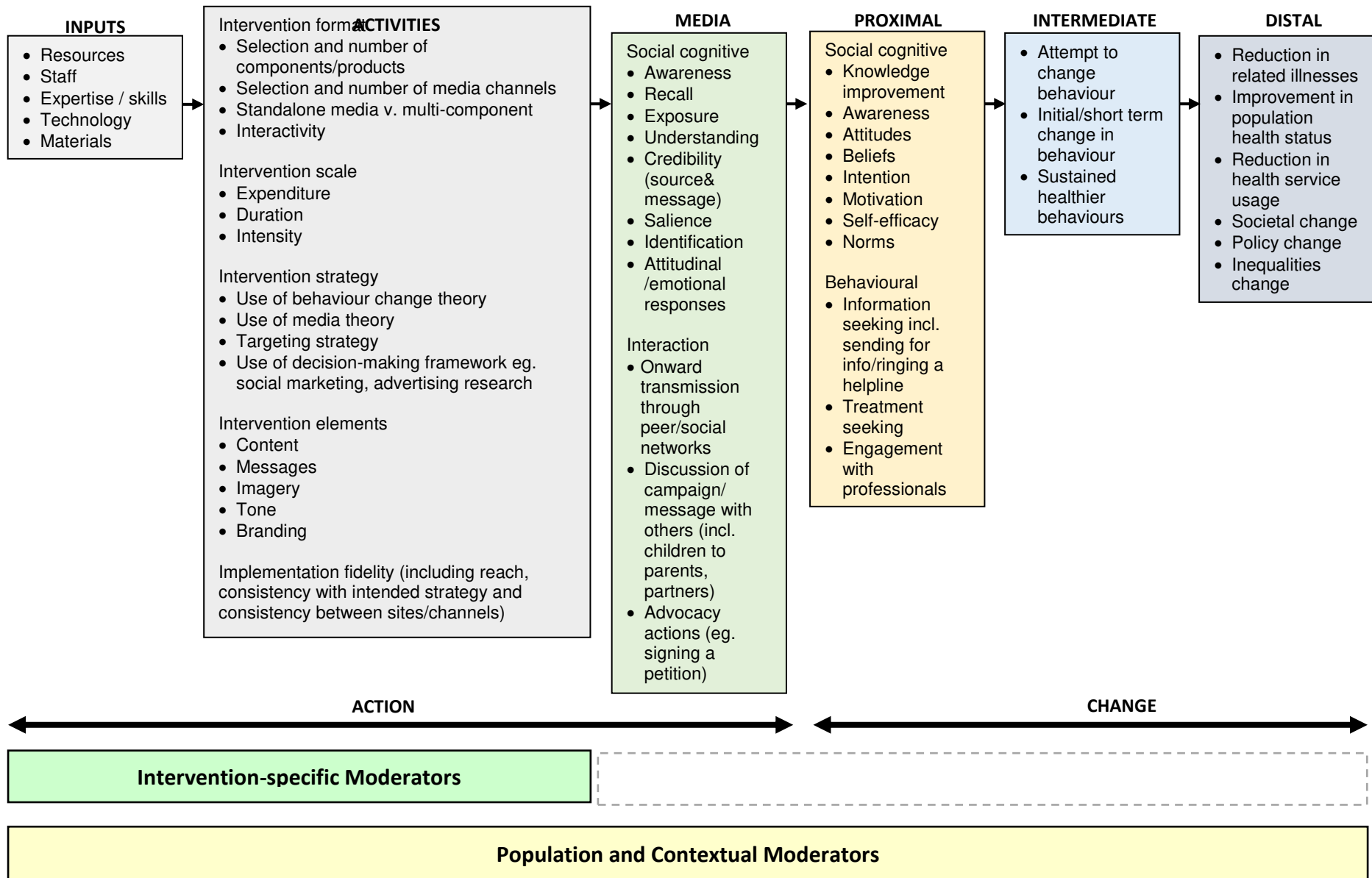


Figure 1: NIHR Mass Media Review: Logic model

Public and stakeholder engagement

Members of the public and stakeholders from a range of organisations were involved in this study. In particular, public and stakeholder engagement informed the development of the research our refinement of research plans and interpreting findings. Stakeholder engagement was particularly important in shaping the focus and scale of our literature searches, in developing and finalising our logic model, and in supporting the research team to reflect on the implications and key messages from our findings, including for the design of mass media campaigns and future research. Chapter 6 describes our engagement activities in more detail.

Chapter 2: What is the impact of mass media campaigns on behaviour and other outcomes?: Findings from the review of reviews (Review A)

Overview

In this chapter we report evidence from the review of reviews on the impact of mass media campaigns on behavioural and other outcomes, and examine evidence of variations in impact between different target populations. The chapter addresses two of the study objectives:

Objective 1. Assess the effectiveness of mass media campaigns to communicate public health messages

Objective 3. Explore how different types and forms of media campaigns can reach and be effective with different target populations (particularly disadvantaged groups)

Methods

Overviews of reviews are becoming an established component in the repertoire of evidence-informed (or -based) policy and practice.¹²⁻¹⁴ In order to answer the questions above, we conducted a review of reviews and carried out a high-level synthesis of the evidence on the effects of mass media campaigns across multiple health behaviours. We registered this review with PROSPERO ([CRD42013004170](https://www.crd42013004170)).¹⁶

Identification of reviews

We combined terms concerning mass media campaigns, such as media, “mass communication”, “social marketing”, and broadcast, with terms denoting systematic reviews and meta-analyses (see Appendix 1). We searched Database of Promoting Health Effectiveness Reviews (DoPHER); Cochrane Database of Systematic Reviews (CDSR); Database of Abstracts of Reviews of Effects (DARE); Campbell Collaboration Library of Systematic Reviews; Health Technology Assessment (HTA) database hosted by the Centre for Reviews and Dissemination; EMBASE; PubMed; Cumulative Index to Nursing and Allied

Health Literature (CINAHL); MEDLINE; and Web of Science between 10th December 2015 and 5th January 2016. We did not systematically search the grey literature, a departure from our protocol, however systematic reviews published as reports, rather than in peer reviewed journals, were still identified by the strategy described above. To check the quality of the searches, we searched the results to find systematic reviews already known to the team. The reference lists of any relevant reviews of reviews were also searched. Results were uploaded to an EPPI-Reviewer 4 database and de-duplicated (see Figure 2).²⁶

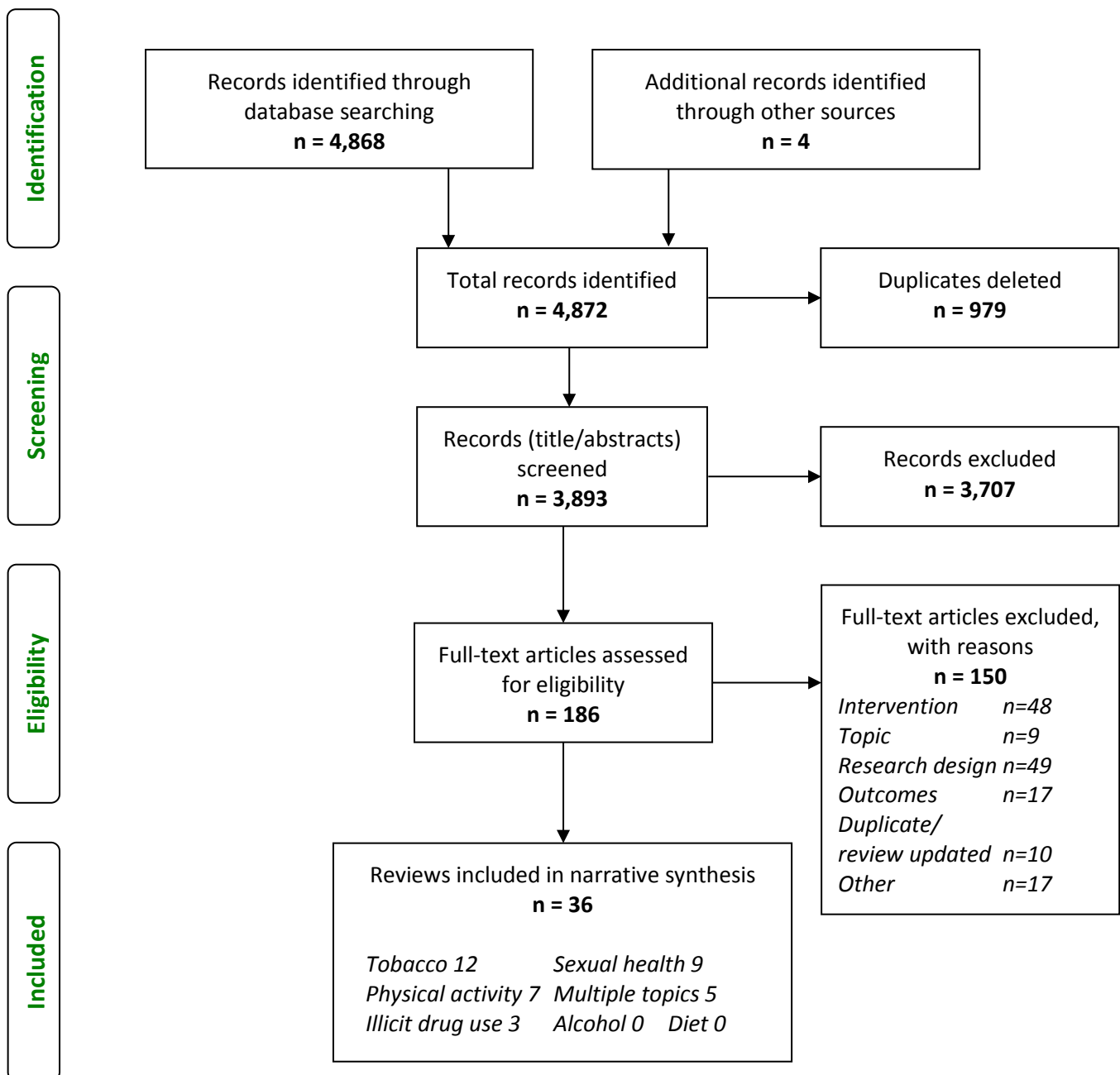


Figure 2: PRISMA diagram of identification and selection of reviews (Review A)

Review selection

Records were screened against the inclusion criteria listed in Box 1. Reviews were screened on title and abstract by three reviewers. We carried out comparison coding as an inter-rater reliability test, and when we agreed on the included and excluded reviews at a 90% rate, the reviewers continued individually. Full text reviews were then retrieved, and individual expert teams assessed the papers in the different health topic categories to reach the final list of reviews. Two researchers from the wider team adjudicated if there was uncertainty about whether to include a review. A list of reviews excluded by full text assessment is appended (Appendix 2).

The review

1. was published in or after 2000
2. was published in English
3. concerned human populations
4. included interventions that met the definition of a mass media intervention: *“the intentional use of any media channel(s) of communication by local, regional and national organisations to influence lifestyle behaviour through largely passive or incidental exposure to media campaigns, rather than largely dependent on active help-seeking”* (adapted from Wakefield *et al.* and Bala *et al.*).^{6,27} This excludes, for example, health campaign websites that individuals actively searched for or signed up for.
5. examined one or more the following health topics: alcohol use, illicit substance use, diet, physical activity (including sedentary behaviour), sexual and reproductive health, and tobacco use. Reviews examining mass media interventions promoting health screening behaviours (e.g. HIV testing, cervical screening) are excluded because NHS population screenings are not part of NIHR PHR’s remit.
6. was conducted as a systematic review; defined as must include a specified search strategy from more than one database, an assessment of the quality of studies and some kind of synthesis of the primary studies.
7. reported sufficient outcome data on behaviour change and/or its individual determinants. In multi-component interventions, the outcome data had to relate to the mass media component, not to the whole intervention.

Box 1: Inclusion criteria (Review A)

Data extraction

Data from reviews identified as meeting the inclusion criteria were extracted into a standardised data extraction form. Data extracted included: review characteristics; participant characteristics; types of study design; types of synthesis; outcome data, particularly social cognitive and behavioural outcomes. For each topic, one reviewer extracted the data, and a sample (at least 25%) was checked by a second reviewer to ensure the consistency of the extraction.

Quality appraisal and relevance assessment

We used the ROBIS tool to assess the risk of bias of included systematic reviews.²⁸ Included reviews were assessed by one researcher, and a second researcher checked all their assessments against the full text review and ROBIS guidelines, with any disagreements discussed between the two researchers. We rated the relevance of the included reviews to our aims (high or low relevance), based on two dimensions: its relevance to an Organisation for Economic Co-operation and Development (OECD) context (included studies conducted in OECD countries versus all studies in the review were conducted in non-OECD countries)²⁹ and whether the review's main focus was on mass media interventions or not. We also extracted information on the quality of the included studies in each review as assessed by the review authors: good, medium or low quality, or not stated.

Data synthesis

Given the highly heterogeneous nature of the interventions and reviews, we did not attempt to conduct meta-analysis, and a narrative synthesis approach was pursued.³⁰ We initially tabulated all available data according to topic and tried to identify duplicate results. We then created tabular summaries of the full data, with information on potential bias within the included evidence base retained. We investigated patterns in the available results, making comparisons across topics, outcomes, and population subgroups (based on the PROGRESS characteristics),³¹ with due attention paid to contradictory data. Analysis

proceeded iteratively, with the whole team regularly meeting to discuss findings. To summarise the results for the outcomes of interest (behaviours, intentions, awareness/knowledge, and attitudes), a symbol was applied to indicate how good the evidence was for a positive or negative effect.³² This incorporated the risk of bias of the relevant reviews and reported effect sizes/directions. Inconsistency statistics were extracted from relevant meta-analyses.

To make conclusions based on the available evidence, we developed a systematic and transparent approach building on principles of the GRADE approach.^{33,34} In addition to risk of bias, we also assessed the domains of inconsistency, indirectness and imprecision for each behaviour. Inconsistency assessed whether the reported effects for a behaviour differed between assessments of behaviour change and its determinants, as well as whether high statistical heterogeneity was observed within meta-analysis. Directness referred to how directly the evidence relates to the health topics examined in this review within the UK context. Evidence on behavioural outcomes was considered 'direct' whereas evidence regarding awareness/knowledge, attitudes or intentions only was considered 'Indirect'. Similarly, if available evidence was primarily drawn from non-OECD countries then this was considered indirect. Imprecision was assessed on the basis of the precision of the effect estimate (e.g. did the 95% CI exclude no effect?). 'Overall effect' was assessed by taking into account the direction of effect for behaviour with consideration of the indirect outcomes and the risk of bias in the evidence available. Where there was evidence at a low risk of bias that was directly observed for the behaviour of interest, with little imprecision and inconsistency, we considered this to have a high level of certainty. We downgraded to moderate, low or very low certainty if there was high risk of bias (by two levels), indirect evidence (by two levels), inconsistency (by one level) and imprecision (by one level).

Overview of included reviews

Thirty-six systematic reviews were included from the initial 3,893 records screened (see Figure 2). The reviews examined mass media interventions for tobacco use (12 reviews),^{27,35-45} sexual health (nine),⁴⁶⁻⁵⁴ physical activity (seven,⁵⁵⁻⁶¹ of which one focused on reducing sedentary behaviour)⁵⁵ and illicit drug use (three),⁶²⁻⁶⁴ with five reviews addressing 'mixed topics',⁶⁵⁻⁶⁹ ie. more than one of our six health topics (see Table 1). Although no systematic reviews met our inclusion criteria for alcohol use or diet mass media interventions, studies evaluating campaigns targeting alcohol or diet were included in four mixed health topics reviews. Fourteen reviews were assessed to have a high risk of bias and 22 a low risk of bias (see Appendix 3). Approximately half focussed solely on mass media interventions (n=17), and the other reviewed broader ranges of behaviour change interventions including mass media campaigns. Where geographical data were provided for mass media studies, 15 of the reviews included at least one study from the UK and four reviews included studies from only non-OECD countries (all sexual health topic reviews), the rest mainly comprised studies of mass media campaigns from OECD countries. On the basis of the reviews' focus on mass media and geographical data, eighteen of the included reviews were judged as highly relevant to the topic. We searched for reviews published between January 2000 and January 2016; the time period covered by the *included* reviews' searches ranged from database inception to January 2015, and the most recent included study was published in 2013.

The reviews focussed on a range of target groups, including studies of mass media campaigns targeting by age group, socio-economic status, ethnicity, gender, sexual orientation, addictive behaviours or morbidity, parental/pregnancy status, in addition to whole population, untargeted campaigns. Twelve reviews did not report the sample sizes of their included studies, and a further four reviews only reported some samples sizes. Over the other twenty reviews, the sample sizes of included studies ranged from 27 to 130,245 participants.

Most of the reviews included studies of mass media campaigns that had national reach (n=22); with a third of these including only national campaigns (n=7), the rest also included

regional and local campaigns. Ten reviews included studies of mass media campaigns that had local reach only or local or national reach. Four of the reviews did not report details on the reach of the campaigns.

Twenty-six reviews presented a narrative synthesis of study results, six reviews completed a meta-analysis of the data and four reviews used both to synthesise and present findings. The reviews examined a range of direct behavioural outcomes (reducing harmful behaviours, increasing healthy behaviours, and help-seeking), indirect behavioural outcomes and socio-cognitive outcomes (intentions, awareness and knowledge, attitudes and beliefs, norms and self-efficacy), and sixteen reviews analysed data for sub-populations (see Table 1).

The types of studies included by the reviews in their syntheses was reported in most of the reviews (n=34). The majority of syntheses included a mixture of study designs, from RCTs and trials, cohort studies, pre-post studies and post-test only studies (n=23). Four reviews synthesised data from RCTs and trials only; six reported data from pre-post-test studies only; and one review reported post-test data only (see Appendix 4 for the detailed characteristics of the included systematic reviews).

Table 1: Summary of included reviews (Review A)

Review	Health topic	Was mass media sole focus?	Aim of review	Relevance to our review of reviews	Type of synthesis	No. of included studies	No. of relevant studies
Risk of bias (ROBIS)							
Abioye (2013)⁵⁵ Low risk of bias	Physical activity	Yes	<i>We searched six electronic databases from their inception to August 2012 and selected prospective studies that evaluated the effect of mass media campaigns on physical activity in adults.</i>	High relevance	Meta-analysis	9 included studies	9 relevant studies
Bala (2013)²⁷ Low risk of bias	Tobacco use	Yes	<i>To assess the effectiveness of mass media campaigns (MMCs) in reducing smoking among adults. Four research questions: i) Do MMCs reduce smoking (prevalence, cigarette consumption, quit attempts and quit rates) compared with no intervention in comparison communities? ii) Do MMCs run in conjunction with tobacco control programmes reduce smoking, compared with no intervention or with tobacco control programmes alone? iii) Which study characteristics relate to their efficacy? iv) Do tobacco MMCs cause any adverse effects?</i>	High relevance	Narrative synthesis	11 included studies	11 relevant studies
Bertrand (2006)⁴⁶ Low risk of bias	Sexual health	Yes	<i>To review the strength of the evidence for the effects of three types of mass media interventions (radio only, radio with supporting media, or radio and television with supporting media) on HIV/AIDS-related behaviour among young people in developing countries and to assess whether these interventions reach the threshold of evidence needed to recommend widespread implementation.</i>	Low relevance	Narrative synthesis	15 included studies	15 relevant studies
Brinn (2010)³⁵ Low risk of bias	Tobacco use	Yes	<i>To determine the strength of the evidence, that mass media interventions to prevent smoking in young people may: 1) reduce smoking uptake among youths</i>	High relevance	Narrative synthesis	7 included studies	7 relevant studies

			<i>(<25 years), 2) improve smoking attitudes, behaviour and knowledge, 3) improve self-efficacy/self-esteem, 4) improve perceptions about smoking including the choice to follow positive role models.</i>				
Brown (2012)⁵⁶ High risk of bias	Physical activity	Yes	<i>The goal of the systematic review described in this summary was to determine the effectiveness of stand-alone mass media campaigns to increase physical activity at the population level</i>	High relevance	Meta-analysis and narrative synthesis	16 included studies	16 relevant studies
Brown (2014a)³⁷ High risk of bias	Tobacco use	No	<i>To assess the effectiveness of population-level interventions/policies to reduce socioeconomic inequalities in smoking among adults by assessing primary studies of any intervention/policy that reported differential effects on a smoking-related outcome in at least two socioeconomic groups.</i>	Low relevance	Narrative synthesis	117 included studies	30 relevant studies
Brown (2014b)³⁶ High risk of bias	Tobacco use	No	<i>What is the equity impact of interventions/policies to reduce youth smoking?</i>	Low relevance	Narrative synthesis	38 included studies	1 relevant study
Byrne (2005)⁶⁵ High risk of bias	Multiple – alcohol use, tobacco use, illicit drug use	Yes	<i>Aims to critically review the literature on past and current drug, alcohol, and tobacco use prevention media campaigns, examining the similarities across health communication programs believed to be effective, with the aim of viewing their applicability for the prevention of youth problem gambling. [RQs not specified]</i>	High relevance	Narrative synthesis	25 included studies	25 relevant studies
Carter (2015)⁴⁷ Low risk of bias	Sexual health	No	<i>Community education may involve activities that seek to raise awareness and promote behavior change, using mass media, social media, and other media or interpersonal methods in community settings. This systematic review evaluated the evidence of the effects</i>	High relevance	Narrative synthesis	17 included studies	14 relevant studies

			<i>of community education on select short- and medium-term family planning outcomes Does community education result in improved, select medium-term outcomes of family planning services? 2 Does community education result in improved short-term outcomes of family planning services? 3 Are there unintended negative consequences of community education in family planning program development and review? 4 What are the barriers and facilitators facing clients in participating in community education activities? 5 What are the barriers and facilitators facing health centers in adopting and implementing community education activities?</i>				
de Kleijn (2015)³⁸ High risk of bias	Tobacco use	No	<i>The primary aim of this review was to determine how effective school-based interventions are in preventing smoking in girls, and the secondary objective was to determine which interventions are most successful.</i>	Low relevance	Meta-analysis and narrative synthesis	37 included studies	4 relevant studies
Derzon (2002)⁶⁶ High risk of bias	Multiple – alcohol use, tobacco use, illicit drug use	Yes	<i>A synthesis into the capability of media interventions to reduce youth substance-use.</i>	High relevance	Meta-analysis	72 included studies	72 relevant studies
Ellis (2003)⁶⁷ Low risk of bias	Topics: Multiple – diet, tobacco use	No	<i>The overall objectives of this evidence report are: (1) to provide an overview of the cancer control interventions (adult smoking cessation, adult healthy diet, mammography, cervical cancer screening, control of cancer pain) that are effective in promoting behavior change; and (2) to identify evidence-based strategies that have been evaluated to disseminate these cancer control interventions.</i>	Low relevance	Narrative synthesis	31 included studies	8 relevant studies

Ferri (2013) ⁶² Low risk of bias	Illicit drug use	Yes	<i>To assess the effectiveness of mass media campaigns in preventing or reducing the use of or intention to use illicit drugs among young people.</i>	Low relevance	Meta-analysis and narrative synthesis	23 included studies	23 relevant studies
Finlay (2005) ⁵⁷ High risk of bias	Physical activity	Yes	<i>The 1998-2002 studies (interventions) were reviewed for their success in impacting message recall and behaviour change. The newer studies plus those identified by Kahn et al 2002 and Marcus et al 1998, were assessed for the presence of a more sophisticated understanding of the media processes of inception, transmission and reception.</i>	High relevance	Narrative synthesis	17 included studies	8 relevant studies
French (2014) ⁴⁸ Low risk of bias	Sexual health	Yes	<i>An exploratory review was conducted to assess research examining awareness, acceptability, effects on HIV testing, disclosure and sexual risk, and cost-effectiveness of HIV mass media campaigns targeting MSM.</i>	High relevance	Narrative synthesis	12 included studies	12 relevant studies
Gould (2013) ³⁹ Low risk of bias	Tobacco use	Yes	<i>(a) To systematically review and summarise the literature describing attitudes and key responses (such as cognitions, awareness, recall, intentions to quit, quit rates) to culturally targeted anti-tobacco messages (in indigenous and First Nations populations in Australia, New Zealand, USA and Canada) and (b) identify any differences in effect according to whether the messages were addressed to the target population or aimed at the general population.</i>	Low relevance	Narrative synthesis	20 included studies	11 relevant studies
Grilli (2000) ⁴⁹ Low risk of bias	Sexual health	Yes	<i>To assess the effects of mass media on the utilisation of health services</i>	Low relevance	Narrative synthesis	21 included studies	2 relevant studies
Guillaumier (2012) ⁴⁰	Tobacco use	Yes	<i>1. Systematically review the published evidence of the effectiveness of mass media campaigns (with the</i>	High relevance	Narrative synthesis	17 included studies	17 relevant studies

Low risk of bias			<i>primary purpose of encouraging smokers to quit) with smokers from socially disadvantaged groups in terms of: The differential effectiveness of mass media campaigns according to sociodemographic group The effectiveness of campaigns targeted towards disadvantaged groups. 2. Critique the methodological quality of the evidence for the effectiveness of mass media campaigns with disadvantaged groups.</i>				
Hemsing (2012)⁴¹ High risk of bias	Tobacco use	No	<i>To provide an analysis of a systematic review of the literature regarding interventions, which promote partner support for smoking cessation during pregnancy. The two primary research questions guiding the review are: 1. Do interventions that involve partners' support of their pregnant partners lead to effective smoking cessation among pregnant partners during pregnancy and postpartum? 2. Are there interventions that are effective in encouraging partners who smoke to stop smoking? Stemming from the second research question, the following subquestions are also assessed in relation to women's smoking cessation: 1. Do the intensity and modality of the intervention influence effectiveness? 2. Does effectiveness vary according to the education level and socioeconomic status (SES) of the target population?</i>	Low relevance	Narrative synthesis	9 included studies	1 relevant study
Hill (2014)⁴² High risk of bias	Tobacco use	No	<i>To review and synthesise existing evidence on the equity impact of tobacco control interventions by SES.</i>	Low relevance	Narrative synthesis	77 included studies	12 relevant studies
Jepson (2006)⁴³ Low risk of bias	Tobacco use	Yes	<i>To synthesise evidence evaluating the effectiveness of mass media interventions on helping people to quit smoking/tobacco use and/or to prevent relapse. These interventions were considered for both the</i>	High relevance	Narrative synthesis	44 included studies	39 relevant studies

			<i>effectiveness of the channel of communication and also for the effectiveness of message content, and this is reported under six research questions. Particular emphasis was placed on evaluating relevance to the UK setting and effectiveness within population groups such as young people, pregnant smokers and hard to reach communities.</i>				
Kahn (2002)⁵⁸ High risk of bias	Physical activity	No	<i>The Guide to Community Preventive Service's methods for systematic reviews were used to evaluate the effectiveness of various approaches to increasing physical activity: informational, behavioral and social, and environmental and policy approaches. Changes in physical activity behavior and aerobic capacity were used to assess effectiveness. What interventions are effective in increasing or maintaining levels of physical activity in populations? What interventions in current use are ineffective, inefficient, or potentially harmful? We have only included data for the point of decision prompts since the Brown study updates the mass media synthesis.</i>	Low relevance	Narrative synthesis	94 included studies	6 relevant studies
Kesterton (2010)⁵⁰ High risk of bias	Sexual health	No	<i>This review investigates the effectiveness of interventions aimed at generating demand for and use of sexual and reproductive health (SRH) services by young people; and interventions aimed at generating wider community support for their use.</i>	Low relevance	Narrative synthesis	74 included studies	3 relevant studies
LaCroix (2014)⁵¹ Low risk of bias	Sexual health	Yes	<i>This meta-analysis was conducted to synthesize evaluations of mass media-delivered HIV prevention interventions, assess the effectiveness of interventions in improving condom use and HIV-related knowledge, and identify moderators of effectiveness.</i>	Low relevance	Meta-analysis	54 included studies	54 relevant studies
Leavy (2011)⁵⁹	Physical activity	Yes	<i>Internationally, mass media campaigns to promote regular moderate-intensity physical activity have</i>	High relevance	Narrative synthesis	18 included studies	18 relevant studies

High risk of bias			<i>increased recently. Evidence of mass media campaign effectiveness exists in other health areas, however the evidence for physical activity is limited. The purpose was to systematically review the literature on physical activity mass media campaigns, 2003-2010. to undertake a systematic review of the literature on physical activity mass media campaigns from 2003 to 2010 and to assess progress and quality of (i) campaign evaluation design and sampling, (ii) use of theory and formative research in campaign development and (iii) evidence of campaign effects including proximal, intermediate and behavioural outcomes (p1061)</i>				
Matson-Koffman (2005)⁶⁰ Low risk of bias	Physical activity	No	<i>"To review selected and recent environmental and policy interventions designed to increase physical activity and improve nutrition as a way to reduce the risk for heart disease and stroke, promote CVH, and summarize recommendations." "For this review, we defined environmental interventions as those strategies that involve changing the physical surroundings and social, economic, or organizational systems in order to promote individual behavior change. The focus of these interventions is on structural changes in the environment rather than individual-level approaches (e.g., small-group educational sessions). ... Policies, which may be used to bring about environmental change, can be either legislative/regulatory or organizational."</i>	Low relevance	Narrative synthesis	64 included studies	7 relevant studies
Mozaffarian (2012)⁶⁸ Low risk of bias	Multiple – diet, physical activity,	No	<i>To identify and assess the evidence for the effectiveness of population approaches in changing dietary, physical activity, or tobacco use habits and related health outcomes. Population strategies were considered in 6 broad domains: (1) Media and</i>	Low relevance	Narrative synthesis	~100 (not stated) included studies	31 relevant studies

	tobacco use		<i>educational campaigns; (2) labeling and consumer information; (3) taxation, subsidies, and other economic incentives; (4) school and workplace approaches; (5) local environmental changes; and (6) direct restrictions and mandates.</i>				
Ogilvie (2007)⁶¹ Low risk of bias	Physical activity	No	<i>To conduct a systematic review of the best available evidence across all relevant disciplines to determine what characterises interventions effective in promoting walking; who walks more and by how much as a result of effective interventions; and the effects of such interventions on overall physical activity and health.</i>	Low relevance	Narrative synthesis	48 included studies	2 relevant studies
Richardson (2008)⁴⁴ Low risk of bias	Tobacco use	No	<i>This review examines the effectiveness of: (a) mass media interventions designed to prevent the uptake of smoking in children and young people and (b) interventions that are designed to prevent the illegal sale of tobacco to children and young people. The review considers specific sub-questions related to the factors that might influence effectiveness, any differential effects for different audiences, and barriers and facilitators to implementation.</i>	High relevance	Narrative synthesis	41 included studies	37 relevant studies
Robinson (2014)⁶⁹ Low risk of bias	Multiple – physical activity, sexual health, tobacco use	Yes	<i>This review aimed to assess the effectiveness of health communication campaigns that include both mass media and health-related product distribution to increase healthy behavior change. (The criterion requiring campaigns to use a mass media channel was developed to decrease the challenge of distinguishing campaigns from health education interventions, resulting in a more homogenous body of evidence, and allowing for a well-defined scope for a systematic review.) The goals of this review were to (1) assess and evaluate high-priority public health outcomes; (2) evaluate the potential utility of social marketing</i>	High relevance	Meta-analysis and narrative synthesis	25 study arms in 22 included studies	11 relevant study arms

			<i>concepts in improving effectiveness of health-promotion campaigns; (3) provide specific recommendations to enhance current strategic and operational approaches; (4) answer questions about the value of using health communication and social marketing principles in the field; and (5) determine whether these principles are broadly applicable.</i>				
Speizer (2003)⁵² High risk of bias	Sexual health	No	<i>We review and synthesize this emerging body of evidence with an eye toward advancing our understanding of “what works” in adolescent reproductive health programming in developing countries.</i>	Low relevance	Narrative synthesis	41 included studies	6 relevant studies
Swanton (2015)⁵³ Low risk of bias	Sexual health	No	<i>The aim of the present research was to examine the effect that new-media-based sexual-health interventions have on sexual-health behaviours in non-clinical populations and to determine the factors that moderate the effect of technology-based sexual-health interventions on sexual--health behaviours.</i>	High relevance	Meta-analysis	15 included studies	12 relevant studies
Sweat (2012)⁵⁴ Low risk of bias	Sexual health	No	<i>To examine the relationship between condom social marketing programmes and condom use.</i>	Low relevance	Meta-analysis	11 included studies	6 relevant studies
Werb (2011)⁶³ High risk of bias	Illicit drug use	Yes	<i>To investigate the state of the research related to the effectiveness of anti-illicit drug public service announcements in modifying behaviour and intention to use illicit drugs among target populations</i>	High relevance	Meta-analysis	11 included studies	11 relevant studies
Werb (2013)⁶⁴ Low risk of bias	Illicit drug use	No	<i>To systematically search the existing peer-reviewed scientific literature in order to identify and assess interventions to prevent the initiation of injection drug use.</i>	Low relevance	Narrative synthesis	8 included studies	1 relevant study
Wilson (2012)⁴⁵	Tobacco use	No	<i>To evaluate the independent effect on smoking prevalence of four tobacco control policies outlined in the WHO MPOWER Package: increasing taxes on</i>	High relevance	Narrative synthesis	84 included studies	19 relevant studies

Low risk of bias			<i>tobacco products, banning smoking in public places, banning advertising and sponsorship of tobacco products, and educating people through health warning labels and antitobacco mass media campaigns.</i>				
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Evidence of impact on behavioural outcomes

We examined evidence of the effects of mass media campaigns on behavioural outcomes relating to all of our health topics. Rather than present evidence simply by health topic, we synthesised evidence across three broad categories of behavioural outcome: reducing harmful behaviours, increasing healthy behaviours, and treatment seeking. We were interested in examining whether the effectiveness of mass media campaigns differs across these three types of behavioural outcome: for example, are mass media campaigns more effective at encouraging or reinforcing positive behaviours than at discouraging negative behaviours? We defined ‘reducing harmful behaviours’ as bringing about a reduction in behaviours which have harmful effects: eg. preventing young people from taking up smoking or encouraging smoking cessation, reducing other substance use, and reducing sedentary behaviour. We defined ‘increasing healthy behaviours’ as encouraging greater engagement in behaviours which are protective of health, such as engaging in physical activity or using a condom. ‘Treatment seeking’ was defined as engaging in specific actions to secure information, advice, support or treatment relating to the health topics examined in the review: for example, using a sexual health service, seeking testing for sexually transmitted diseases, or calling a smoking quitline.

Reducing harmful behaviours

Fourteen reviews reported evidence on whether mass media campaigns reduced harmful behaviours as outlined in Table 2 below.^{27,35,38,40,41,43-45,55,62,63,65,66,68} Eleven focused on a specific health topic and three examined mixed health topics.^{65,66,68} All 14 reviews included studies based in OECD countries, and seven included studies conducted in the UK.^{27,41,43-45,55,68} Ten of the reviews were rated as having a low risk of bias,^{27,35,38,40,43-45,55,62,68} and four a high risk of bias.^{41,63,65,66} Eleven focused on a specific health topic and three examined mixed health topics.^{65,66,68} Three used meta-analysis,^{55,62,66} with the remainder presenting results in a narrative synthesis.

Effects on sedentary behaviour were examined in one review. A meta-analysis of studies based in OECD countries on the effect of mass media campaigns on physical activity in adults

found evidence of mass media campaigns reducing sedentary behaviour (RR = 1.15, 95% CI: 1.03 to 1.30), with moderate heterogeneity observed ($I^2=63\%$, $p=0.018$).⁵⁵

Table 2: Summary of reducing harmful behaviours (including reducing sedentary behaviour, illicit drug use, smoking prevalence and alcohol use)

Review Topic	Outcome	Review	Result	Risk of bias & quality		Mass media focus
				Review Risk of Bias ^a	Quality of included studies ^b	
Physical activity	Reduction in sedentary behaviour	Abioye (2013) ⁵⁵	▲ RR 1.15, 95%CI: 1.03 to 1.30 (4 studies) ~ Inconsistent (I ² =63%)	✓	=	All 15 studies on mass media
Illicit drugs	Use of illicit drugs	Ferri (2013) ⁶²	Meta-analysis of RCTs: ● ~ Inconsistent I ² =70%	✓	=	All 23 studies on mass media
Illicit drugs	Use of illicit drugs	Ferri (2013) ⁶²	Other study designs (not RCTs): △	✓	=	All 23 studies on mass media
Illicit drugs	Use of illicit drugs	Werb (2011) ⁶³	▲ ~ Inconsistent (I ² =100%)	✘	Not stated	All 11 studies on mass media
Tobacco	Smoking uptake	Richardson (2008) ⁴⁴	△	✓	=	37 of 60 studies on mass media
Tobacco	Smoking initiation	Wilson (2012) ⁴⁵	◁▷	✓	=	19 of 84 studies on mass media
Tobacco	Smoking uptake	Brinn (2010) ³⁵	◁▷	✓	✘	All 7 studies on mass media
Tobacco	Smoking uptake	de Kleijn (2015) ³⁸	△	✓	Not stated	4 of 37 studies on mass media
Tobacco	Smoking prevalence	Bala (2013) ²⁷	◁▷	✓	✘	All 11 studies on mass media
Tobacco	Smoking prevalence	Wilson (2012) ⁴⁵	◁▷	✓	=	19 of 84 studies on mass media

Tobacco	Smoking consumption	Bala (2013) ²⁷	◁▷	✓	✖	All 11 studies on mass media
Tobacco	Quit attempts	Bala (2013) ²⁷	◁▷	✓	✖	All 11 studies on mass media
Tobacco	Quit rates	Bala (2013) ²⁷	◁▷	✓	✖	All 11 studies on mass media
Tobacco	Quit attempts	Hemsing (2012) ⁴¹	0 Based on 1 study	✖	=	1 of 9 studies on mass media
Tobacco	Smoking cessation	Wilson (2012) ⁴⁵	◁▷	✓	=	19 of 84 studies on mass media
Tobacco	Smoking cessation	Jepson (2006) ⁴³	◁▷	✓	✖	39 of 44 studies on mass media
Tobacco	Smoking cessation	Guillaumier (2012) ⁴⁰	◁▷	✓	✖	17 of 17 studies on mass media
Tobacco (mixed topics review)	Smoking prevention & cessation	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies
Mixed Topics	Substance use (illicit drugs, alcohol & tobacco)	Derzon (2002) ⁶⁶	▲	✖	Not stated	All 72 studies
Mixed Topics	Substance use (illicit drugs, alcohol & tobacco)	Byrne (2005) ⁶⁵	△	✖	Not stated	All 25 campaigns in 53 studies

Key

▲ = positive results, statistics provided. (Positive in public health terms, e.g. positive = a decrease in smoking)

△ = positive results, no statistics reported/narrative results

▼ = negative results, statistics provided

▽ = negative results, no statistics reported/narrative results

● = no effect, statistics provided

O = no effect, no statistics reported/narrative results

◄► = mixed results, statistics provided

◁▷ = mixed results, no statistics reported/narrative results.

✓ = Consistent (used only where statistics have been provided)

~ = Inconsistent (used only where statistics have been provided)

a. Review risk of bias using ROBIS²⁸: ✓ low risk of bias; ✗ high risk of bias

b. Quality of included studies: ✓ good quality; = medium quality; ✗ low quality; or Not stated. Based on review authors' own assessment of quality.

Two reviews reported on whether mass media campaigns impacted on illicit drug use. A meta-analysis of RCT studies of campaigns targeting young people (<26 years) found no effect (standardised mean difference = -0,02, 95% CI:-0.15 to 0.12), but did find evidence of reductions in the use of illicit drugs in an analysis of non-RCT studies.⁶² The other, a review of the effects of anti-illicit drug public service announcements (PSAs) on youth (no definition by age specified) found very small positive reductions in illicit drug use, with considerable inconsistency; however, it should be noted this review had a high risk of bias.⁶³

Nine reviews (eight focusing specifically on tobacco,^{27,35,38,40,41,43-45} and one examining a range of health topics)⁶⁸ examined the impact of mass media campaigns on tobacco use. All included OECD-based studies, and five included UK studies.^{27,41,43-45} Four reviews, all low risk of bias, examined the impact on preventing smoking uptake in young people. Richardson *et al.*,⁴⁴ which included one UK study, reported positive results for smoking prevention: the narrative synthesis found evidence to suggest that mass media campaigns can prevent the uptake of smoking in young people (evidence from one review and two studies) and that industry-sponsored studies are less effective (evidence from one study). The other three reviews – Wilson *et al.* (which included one UK study), de Kleijn *et al.* and Brinn *et al.* – all reported mixed results.^{35,38,45}

Five reviews examined smoking cessation or quit rates. Four low risk of bias reviews that included UK or OECD studies reported mixed results.^{27,40,43,45} The fifth review reported no effect on quit attempts, the review had a high risk of bias and the evidence was from one study conducted in the UK.⁴¹ Finally, a review which examined a range of health topics reported evidence of mass media campaigns having a positive effect on the combined outcomes of smoking prevention and cessation.⁶⁸

The impact of mass media on the use of a combination of substances (alcohol, illicit drugs, and alcohol) was examined by two mixed health topic reviews.^{65,66} While both of these reviews reported positive effects, both reviews were rated as high risk of bias.

Increasing healthy behaviours

Twelve reviews reported evidence on whether mass media campaigns can increase healthy behaviours (Table 3). Ten focused on specific health topics (either physical activity,⁵⁵⁻⁶¹ or sexual health)⁵²⁻⁵⁴ and two examined a range of topics.^{68,69} None of the included reviews focused exclusively on diet/healthy eating, but one of the mixed topics reviews included evidence on diet-related behaviours.⁶⁹ Nine of the reviews included studies conducted in OECD countries,^{55-61,68,69} four included studies conducted in the UK,^{55,57,58,60} and two did not report the countries.^{53,56} Two of the reviews, focusing on sexual health interventions, comprised studies conducted in low- and middle-income countries.^{52,54}

Eight of the reviews examined whether there was evidence that mass media campaigns could increase physical activity. A range of physical activity outcomes were reported, including walking, overall levels of physical activity, and using the stairs. In reviews which examined impact on stair use, the mass media campaigns typically comprised 'point-of-decision prompts' such as posters in locations with high footfall (public transport hubs, workplaces) encouraging people to use the stairs rather than the lift or escalator.

Two low risk of bias reviews reported evidence that mass media campaigns increased *walking behaviour*. In a meta-analysis of four studies,⁵⁵ Abioye *et al.* found evidence that mass media campaigns could produce an increase in brisk walking (RR= 1.53, CI: 1.25 to 1.87), while Ogilvie *et al.* found evidence from two studies that mass media campaigns increased the time spent walking.⁶¹ Two low risk of bias reviews, one focusing specifically on physical activity and one examining a range of topics,^{60,68} found that *stair use* was increased by mass media campaigns comprising point-of-decision prompts (e.g. signs and banners to encourage using stairs). A third review, with a high risk of bias, also reported evidence that mass media campaigns could increase stair use.⁵⁸

However, reviews which examined overall levels of physical activity or time spent in physical activity reported generally mixed evidence. A meta-analysis of four studies in one low risk of bias review found no clear impact on overall physical activity (RR=1.02 95% CI: 0.91 to 1.14, $I^2=72\%$).⁵⁵ In contrast, a mixed topics review at low risk of bias found a positive effect on

increases in overall physical activity.⁶⁸ Evidence from three high risk of bias reviews which examined changes in physical activity behaviours was generally mixed.^{56,57,59}

Four reviews provided evidence on whether mass media campaigns could increase healthy sexual health behaviours. Three reviews with low risk of bias examined the impact of mass media on condom use: two of these reviews conducted meta-analysis and found media campaigns had a positive effect on condom use, with inconsistency in the effect estimates (OR=1.39, CI=-1.06 to -1.83;⁵³ and OR=2.01, CI=1.42 to 2.84, OR=2.10, CI=1.51 to 2.91).⁵⁴ The third review, which was of mixed health behaviour topics, also reported positive effects on condom use.⁶⁹ The fourth review reported mixed results of the effect of mass media on sexual health behaviours;⁵² this review was found to have a high risk of bias.

Finally, a mixed topics review with low risk of bias reported that mass media campaigns could have a positive effect on consumption of healthy food.⁶⁸

Table 3: Summary of increasing healthy behaviours

Review Topic	Outcome	Review	Result	Risk of bias & quality		Mass media focus
				Review Risk of Bias ^a	Quality of included studies ^b	
Diet (mixed topics review)	Consumption of healthy food	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies
Physical activity	Brisk walking	Abioye (2013) ⁵⁵	▲ RR 1.53, CI: 1.25 to 1.87 ✓ Consistent (I ² =0%)	✓	=	All 15 studies on mass media
Physical activity	Time spent walking	Ogilvie (2007) ⁶¹	△	✓	=	2 of 48 studies on mass media
Physical activity	Overall physical activity	Abioye (2013) ⁵⁵	● RR 1.02 (95% CI: 0.91 to 1.14) ~ Inconsistent I ² =72%	✓	=	All 15 studies on mass media
Physical activity (mixed topics review)	Increases in physical activity	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies
Physical activity	Self-report time spent in physical activity	Brown (2012) ⁵⁶	▲ median relative increase of 4.4%	✘	=	All 16 studies on mass media
Physical activity	Self-reported activity	Brown (2012) ⁵⁶	△	✘	=	All 16 studies on mass media

Physical activity	Changes in physical activity	Finlay (2005) ⁵⁷	◁▷	✘	=	All 8 studies on mass media
Physical activity	Self-reported activity	Brown (2012) ⁵⁶	◁▷	✘	=	All 16 studies on mass media
Physical activity	Changes in physical activity	Leavy (2011) ⁵⁹	◁▷	✘	✘	All 18 studies on mass media
Physical activity	Stair use	Matson-Koffman (2005) ⁶⁰	△	✓	✓	9 of 64 studies on mass media
Physical activity (mixed topics review)	Stair use	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies
Physical activity	Stair use	Kahn (2002) ⁵⁸	△	✘	=	6 of 94 studies on mass media
Sexual health	Condom use	Swanton (2015) ⁵³	▲ OR=1.39, 95% CI 1.06 to 1.83) ~Inconsistent I ² =77.2%	✓	✘	12 of 15 studies on mass media
Sexual health	Condom use – most recent sex encounter	Sweat (2012) ⁵⁴	▲ OR=2.01 (95% CI: 1.42–2.84) ~Inconsistent (narratively assessed)	✓	✘	6 of 11 studies on mass media
Sexual health	Condom use – all condom use	Sweat (2012) ⁵⁴	▲ OR=2.10 (95% CI: 1.51–2.91) ~Inconsistent	✓	✘	6 of 11 studies on mass media

			(narratively assessed)			
Sexual health	Condom use	Speizer (2003) ⁵²	◁▷	*	✓	6 of 41 studies on mass media
Sexual health (mixed topics review)	Condom use	Robinson (2014) ⁶⁹	△	✓	=	All 22 studies
Key: as Table 2						

Treatment seeking

Ten reviews provided information on treatment seeking: six focused on treatment seeking in relation sexual health,^{46-50,52} and four in relation to tobacco use (Table 4).^{27,37,42,43} Seven of the reviews included studies conducted in OECD countries,^{27,37,42,43,47-49} and all seven included studies conducted in the UK. Six were low risk of bias,^{27,43,46-49} and four were high risk of bias.^{37,42,50,52}

Of four reviews examining impact of media campaigns on use of sexual health services or clinics, one found a positive effect,⁴⁷ and one reported mixed results.⁴⁹ Positive results were reported in two further reviews,^{50,52} but results were from only one study in each review and both reviews were high risk of bias. The effects of mass media campaigns on uptake of HIV testing or HIV services was examined in two low risk of bias reviews, both reporting mixed evidence.^{46,48}

There was evidence of mass media campaigns having a positive effect on calls to smoking quitlines from two low risk of bias reviews,^{27,43} although based on only one study in one of the reviews.²⁷ Mixed evidence was reported for the impact of mass media campaigns on smoking quitlines in two high risk of bias reviews.^{37,42}

Table 4: Summary of treatment seeking and information seeking

Review Topic	Outcome	Review	Result	Risk of bias & quality		Mass media focus
				Review Risk of Bias ^a	Quality of included studies ^b	
Sexual health	Use of family planning services	Carter (2015) ⁴⁷	△	✓	=	14 of 17 studies on mass media
Sexual health	Use of health services	Grilli (2000) ⁴⁹	◁▷	✓	✗	2 of 21 studies on mass media
Sexual health	Use of health centre	Kesterton (2010) ⁵⁰	△ Based on 1 study	✓	✗	3 of 74 studies on mass media
Sexual health	Use of clinic	Speizer (2003) ⁵²	△ Based on 1 study	✗	✓	6 of 41 studies on mass media
Sexual health	HIV testing	French (2014) ⁴⁸	◁▷	✓	✗	All 12 studies on mass media
Sexual health	Use of HIV service/ clinic	Bertrand (2006) ⁴⁶	◁▷	✓	✗	All 15 studies on mass media
Tobacco	Calls to quitline	Jepson (2006) ⁴³	△	✓	✗	39 of 44 studies on mass media
Tobacco	Calls to quitline	Bala (2013) ²⁷	△ Based on 1 study	✓	✗	All 11 studies on mass media
Tobacco	Calls to quitline	Hill (2014) ⁴²	◁▷	✗	✗	12 of 77 studies on mass media
Tobacco	Calls to quitline	Brown (2014a) ³⁷	◁▷	✗	✗	30 of 117 studies on mass media

Key: as Table 2

Evidence of impact on indirect behavioural outcomes and social cognitive outcomes

We also examined evidence of the effects of mass media campaigns on indirect behavioural outcomes and social cognitive outcomes. Indirect behavioural outcomes were defined as intentions to engage in, reduce or desist from unhealthy behaviours (such as smoking) or to engage in healthy behaviours (such as condom use). Social cognitive outcomes comprised awareness, knowledge, attitudes, beliefs, norms and self-efficacy.

Intentions

Seven reviews examined whether there was evidence that mass media campaigns had an impact on intentions to change behaviour (Table 5).^{35,39,47,59,62,63,69} All of the reviews included studies from OECD countries but none included studies from the UK. Statistical methods were used in two reviews to assess the impact of mass media campaigns on illicit drug use intentions.^{62,63} The remaining five reviews used narrative synthesis. Most of the reviews were good quality (low risk of bias).

Three low risk of bias reviews examined tobacco use, two focusing solely on tobacco,^{35,39} and one mixed topics review which included tobacco.⁶⁹ Positive results for intentions to quit or to smoke were reported in two of the reviews,^{39,69} while one review that focused on reducing smoking prevalence in young people reported largely mixed results for intention to start smoking.³⁵ The quality of the included studies was assessed by the reviews themselves as medium to low.

Statistical pooling in two reviews, one low risk of bias,⁶² and one high risk of bias,⁶³ found a mixed impact of mass media campaigns on illicit drug use intentions (including not to use, to reduce use or stop use), with no clear indication of either a positive or negative overall effect.

One sexual health review with a low risk of bias reported largely mixed results for intentions to use contraception,⁴⁷ while a physical activity review reported largely positive results for intentions to be more active,⁵⁹ but the review had a high risk of bias).

Table 5: Summary of indirect behavioural outcomes and social cognitive outcomes: intentions

Review Topic	Outcome	Review	Result	Risk of bias & quality		Mass media focus
				Review Risk of Bias ^a	Quality of included studies ^b	
Illicit drug use	<i>Not to use/to reduce use/to stop use of illicit drugs</i>	Ferri (2013) ⁶²	◀▶ SMD -0.07; 95% CI -0.19 to 0.04 ~ I ² =0.0%	✓	=	All 23 mass media studies
Illicit drug use	<i>To use illicit drugs</i>	Werb (2011) ⁶³	◀▶ 0.29 (95% CI -0.17 to 0.75 ✓ I ² =66.1%	✘	Not stated	All 11 mass media studies
Physical activity	<i>To be more active</i>	Leavy (2011) ⁵⁹	△	✘	✘	All 18 studies on mass media
Sexual health	<i>To use contraception</i>	Carter (2015) ⁴⁷	◁▷	✓	=	14 of 17 mass media studies
Tobacco use (Mixed topics review)	<i>Intentions to quit, calls to quitlines</i>	Robinson (2014) ⁶⁹	△	✓	=	All 22 studies
Tobacco use	<i>To quit or smoke</i>	Gould (2013) ³⁹	△	✓	✘	11 of 20 studies on mass media
Tobacco use	<i>To smoke</i>	Brinn (2010) ³⁵	◁▷	✓	✘	All 7 mass media studies

Key: as Table 2

Awareness and knowledge

Fifteen reviews reported on whether mass media campaigns had an impact on awareness and knowledge (Table 6).^{27,35,39,44,46,47,50-52,57,62,65-68} The reviews had varying levels of relevance to the UK context: three reviews included non-OECD country research only, five reviews included one or two UK studies, and the rest were reviews of studies from mainly OECD countries. Two reviews presented statistical results, with the remaining reviews presenting only narrative results.^{51,66}

There was evidence that mass media campaigns increased knowledge and awareness in relation to sexual health (including knowledge of HIV prevention and transmission, of contraception and of services). One low risk of bias meta-analysis of 54 studies found consistent positive results for improvement of knowledge of HIV transmission ($d+=0.30$, 95%CI = 0.18 to 0.41, $k=47$) and prevention ($d+=0.39$, 95%CI = 0.25 to 0.52, $k=65$).⁵¹ Positive results regarding sexual health awareness and knowledge outcomes were also reported in four reviews using narrative synthesis (Bertrand, Carter, Kesterton and Speizer),^{46,47,50,52} but three of the four did not include any studies from the UK or other OECD countries, one review had a high risk of bias,⁵² and both Speizer *et al.* and Kesterton *et al.* based their results on only one study.^{50,52} The review by Bertrand *et al.* also reported some mixed results.⁴⁶

Four low risk of bias reviews found mixed evidence that mass media campaigns could improve awareness and knowledge regarding tobacco. Two reviews, which both included studies from the UK,^{27,44} reported mixed results, while the third reported positive results,³⁹ and the fourth reported negative results.³⁵ A low risk of bias mixed topics review which examined effects on knowledge of smoking cessation helplines reported positive results.⁶⁷

Effects on knowledge of illicit drugs were examined in one illicit drugs review with low risk of bias, which reported mixed results.⁶² In addition, two mixed topics reviews (Derzon and Lipsey 2002, Byrne 2005) examined effects on tobacco, alcohol and illicit drugs knowledge.^{65,66} The first, a meta-analysis of effects on drugs knowledge reported positive results ($\Delta=0.05$ SD, $p<0.05$),⁶⁶ and the second, a narrative review also reported positive results,⁶⁵ however these two reviews had a high risk of bias.

There was weak evidence that mass media campaigns could impact on awareness and knowledge regarding physical activity. Overall positive results, including from UK studies, were reported in one mixed topics review with a low risk of bias which examined this outcome,⁶⁸ while positive results were also reported by Finlay *et al.*,⁵⁷ but the review had a high risk of bias.

Finally, two of the mixed topics reviews examined evidence of impact on diet-related awareness and knowledge, both reporting positive results;^{67,68} Mozaffarian *et al.* included UK studies.⁶⁸

Table 6: Summary of indirect behavioural outcomes and social cognitive outcomes: awareness/knowledge

Review Topic	Outcome	Review	Result	Risk of bias & quality		Mass media focus
				Review Risk of Bias ^a	Quality of included studies ^b	
Diet (mixed topics review)	Healthy diets	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies
Diet (mixed topics review)	Dietary counselling helplines	Ellis (2003) ⁶⁷	△	✓	✖	8 of 31 studies
Illicit drug use	Illicit drug effects	Ferri (2013) ⁶² <i>Effects of illicit drugs use</i>	◁▷	✓	=	All 23 studies on mass media
Physical activity (mixed topics review)	Physical activity	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies
Physical activity	Physical activity	Finlay (2005) ⁵⁷	△	✖	=	All 8 studies on mass media
Sexual health	HIV prevention & transmission	LaCroix (2014) ⁵¹	HIV prevention: ▲ d+ = 0.39, 95% CI = 0.25 to 0.52, k = 65 HIV transmission: ▲ d+ = 0.30, 95% CI = 0.18 to 0.41	✓	Not stated	All 54 studies on mass media

Sexual health	Sexual health	Carter (2015) ⁴⁷	△	✓	=	14 of 17 studies on mass media
Sexual health	Contraception	Carter (2015) ⁴⁷	△	✓	=	14 of 17 studies on mass media
Sexual health	Health products/service	Bertrand (2006) ⁴⁶	△	✓	✘	All 15 studies on mass media
Sexual health	HIV transmission; condom use; HIV risk; prevention methods	Bertrand (2006) ⁴⁶	◁▷	✓	✘	All 15 studies on mass media
Sexual health	How to access services	Kesterton (2010) ⁵⁰	△ Based on 1 study	✓	✘	3 of 74 studies on mass media
Sexual health	Reproductive health	Speizer (2003) ⁵² <i>Reproductive health</i>	△ Based on 1 study	✘	✓	6 of 41 studies on mass media
Tobacco use	* Knowledge , attitudes, intentions towards tobacco use & the tobacco industry	Richardson (2008) ⁴⁴	◁▷	✓	=	37 of 60 studies on mass media
Tobacco use	*Knowledge / beliefs: Smoking and cardiovascular risk	Bala (2013) ²⁷	◁▷	✓	✘	All 11 studies on mass media
Tobacco use	Smoking	Gould (2013) ³⁹	△	✓	✘	11 of 20 studies on mass media

Tobacco use (mixed topics review)	Smoking cessation helplines	Ellis (2003) ⁶⁷	△	✓	*	8 of 31 studies
Tobacco use	Smoking	Brinn (2010) ³⁵	▽	✓	*	All 7 studies on mass media
Mixed topics review	Substance use (illicit drugs, alcohol & tobacco)	Derzon (2002) ⁶⁶	▲	*	Not stated	All 72 studies
Mixed topics	Substance use (illicit drugs, alcohol & tobacco)	Byrne (2005) ⁶⁵	△	*	Not stated	All 25 campaigns in 53 studies
Key: as Table 2 * indicates that the different outcomes were not reported separately in the original review.						

Attitudes, beliefs, norms and self-efficacy

Ten reviews reported on whether mass media campaigns had an impact on attitudes, beliefs, norms and self-efficacy (Table 7).^{27,35,44,46,47,52,62,65,66,68} One review conducted a meta-analysis,⁶⁶ however only narrative results were presented in the other nine reviews. Most of the reviews were good quality (low risk of bias), but their UK relevance varied.

For illicit drugs, the evidence was mixed. A mixed topics meta-analysis which examined effects on drug use attitudes reported overall positive results ($\Delta=0.02$ SD, $p<0.05$),⁶⁶ but the review was high risk of bias, while mixed evidence of impact on attitudes to illicit drug use and perceived peer norms was reported in a low risk of bias review,⁶² and in a high risk of bias review.⁶⁵

For sexual health, overall positive results regarding beliefs about risk of pregnancy were reported in one review with low risk of bias.⁴⁷ Positive results regarding other attitude changes were reported in two other sexual health reviews,^{47,52} but Speizer *et al.* included only low income countries and in both cases, the results reported were from only one study. Mixed results were reported for impact on self-efficacy, and negative results for impact on beliefs, by Bertrand *et al.*,⁴⁶ but the review was limited to low income country studies and therefore of less relevance.

The evidence was mixed for tobacco. Three reviews, two including UK studies, reported overall mixed results for impact on attitudes,^{27,35,44} while Brinn *et al.* also reported overall negative results for impact on self-efficacy.³⁵ However, a mixed topics review including UK studies which examined impact on attitudes to smoking reported overall positive results.⁶⁸ The same review also reported overall positive results for attitudes to physical activity.

Table 7: Summary of indirect behavioural outcomes and social cognitive outcomes: attitudes

Review Topic	Outcome	Review	Result	Risk of bias & quality		Mass media focus
				Review Risk of Bias ^a	Quality of included studies ^b	
Illicit drug use	Attitudes: illicit drug use (P-SC)	Ferri (2013) ⁶² <i>Illicit drug use</i>	◁▷	✓	=	All 23 studies on mass media
Illicit drug use	Norms: perceived peer norms	Ferri (2013) ⁶²	◁▷	✓	=	All 23 studies on mass media
Physical activity (mixed topics review)	Attitudes: physical activity.	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies
Sexual health	Attitudes: use of family planning	Carter (2015) ⁴⁷	△ Based on 1 study	✓	=	14 of 17 studies on mass media
Sexual health	Attitudes: reproductive health	Speizer (2003) ⁵²	△ Based on 1 study	✗	✓	6 of 41 studies on mass media
Sexual health	Beliefs: risk of pregnancy	Carter (2015) ⁴⁷	△	✓	=	14 of 17 studies on mass media
Sexual health	Beliefs: personal risk of HIV/AIDS	Bertrand (2006) ⁴⁶	▽	✓	✗	All 15 studies on mass media
Sexual health	Self-efficacy: using condoms	Bertrand (2006) ⁴⁶	◁▷	✓	✗	All 15 studies on mass media
Tobacco use	Attitudes: smoking	Mozaffarian (2012) ⁶⁸	△	✓	=	25 of about 100 studies

(mixed topics review)						
Tobacco use	* Knowledge, attitudes , and intentions: smoking towards tobacco use & the tobacco industry	Richardson (2008) ⁴⁴	◁▷	✓	=	37 of 60 studies on mass media
Tobacco use	* Knowledge / beliefs, attitudes , norms , social influences: smoking and cardiovascular risk	Bala (2013) ²⁷	◁▷	✓	*	All 11 studies on mass media
Tobacco use	Attitudes, norms	Brinn (2010) ³⁵	◁▷	✓	*	All 7 studies on mass media
Tobacco use	Self-efficacy	Brinn (2010) ³⁵	▽	✓	*	All 7 studies on mass media
Mixed Topics	Attitudes: substance use (illicit drugs, alcohol & tobacco)	Derzon (2002) ⁶⁶	▲	*	Not stated	All 72 studies
Mixed Topics	Attitudes: substance use (illicit drugs, alcohol & tobacco)	Byrne (2005) ⁶⁵	◁▷	*	Not stated	All 25 campaigns in 53 studies

Key: as Table 2

* indicates that the different outcomes were not reported separately in the original review.

Evidence of impact on distal outcomes

In addition to investigating the impact of mass media on proximal outcomes (such as beliefs, attitudes and self-efficacy) and intermediate outcomes (including attempted and sustained behaviour change), evidence on distal outcomes was sought. As noted in the logic model earlier (Figure 1), these included reduction in illnesses, improved population health, reduced health service usage, societal change, policy change and impact on inequalities. Of all of the systematic reviews included, only one reported on any distal outcomes.⁴³ The authors noted: “There is evidence of good quality (1&2+, C), which shows an effect of mass media interventions on attitudes towards smoking and intentions to smoke among young people under 25 years”.⁴³ This suggests that mass media programmes may have contributed to the de-normalisation of smoking amongst young people.

Evidence of impact on different target subpopulations

Summary of the approach to subpopulations in reviews

The majority of included reviews provide evidence for whether effects of mass media campaigns were comparable across one or more subpopulations. Reviews differ in the extent to which identification and synthesis of subpopulation differences formed a primary objective. For several reviews, all focussing on tobacco control campaigns, the main aim of the review was to determine equity or inequity of effects of campaigns across socio-economic groups.^{37,40,42} Some reviews dedicated part of their synthesis to looking at effects in specific subgroups,^{43-45,54,62} or to looking more generally for factors that moderate sizes of effect,^{51,55} or described results separately for subgroups where this was shown in the original papers.^{27,58,61,63} Most reviews provide a narrative synthesis of results for different sub-populations as described by the original studies; very few have conducted a formal statistical subgroup analysis. Some reviews which have included a meta-analysis have examined the factors which cause heterogeneity in study findings,^{51,55} or analyse in subgroups where available from the original studies.^{54,62} A few reviews simply highlighted the subgroups in whom statistically significant effects had been found in the original studies; if this was not part of a more formal subgroup analysis these results have not been included.

Where reviews focussed on effects of mass media campaigns in a particular target population, those effects have been described earlier according to the relevant outcomes.

The majority of reviews concentrated on behaviour change outcomes, either reducing harmful behaviour or increasing health behaviour, rather than proximal outcomes, when describing and synthesising effects in sub populations.

Description of the subpopulations that have been considered

The subpopulations considered differ markedly according to health behaviour, with gender,^{27,43,44,51,54,55,58} and age^{27,44,45,51,55,62} being the only factors common across a number of reviews in different areas. Differences have also been examined according to ethnicity for several health behaviours.^{27,39,44,58} Consideration of socio-economic factors and the equity of effect across socio-economic groups has been exclusively a feature of reviews of the tobacco control literature, in line with the strong socio-economic differential in the pattern of smoking and smoking-related morbidity in many developed countries.^{27,37,40,42,44} Other sub-populations have been defined according to the pre-campaign level of behaviour, for example by the level of initial physical activity or obesity for campaigns aimed at improving physical activity,^{58,61} by prior sexual health behaviour for a review of campaigns relating to sexual health,⁵¹ and a review of campaigns relating to illicit drugs examined effects according to sensation seeking behaviour.⁶³

Effects by subpopulations

Effects by age

Differences by age were reported in terms of youth versus adults, and according to differing age groups within children and adults. For some health behaviours, notably smoking, reviews focussed exclusively on youth (smoking uptake) or adults (smoking cessation) and the findings and any contrasting findings of these reviews are described earlier. Six reviews, all at low risk of bias, describe effects by age group, three for tobacco control

campaigns,^{27,44,45} one for illicit drugs,⁶² one for physical activity,⁵⁵ and one for sexual health.⁵¹ The age groups considered varied markedly between behaviours and between reviews.

Two reviews with low risk of bias provided evidence that the effects of tobacco control mass media campaigns differ by age, and may be greater for younger children than older children, and greater for youths than adults. The evidence is relevant to the UK as the reviews concerned included studies only from the UK or OECD countries. The review by Richardson *et al.* found evidence that tobacco control campaigns appeared to benefit (decrease intentions to smoke, initiation rates or continuation of smoking) younger children more than older children.⁴⁴ Wilson *et al.* report that findings for youth populations were more consistent than those for adults, with most studies reporting a reduction of 20% to 40% in the odds of smoking initiation.⁴⁵ However, a third low risk of bias review of tobacco mass media campaigns (Bala 2013) found that the impact of age was contradictory, with three campaigns detecting positive effects among older smokers, and three among younger smokers (up to 34 years).²⁷

For illicit drugs, Ferri *et al.* found that campaigns on methamphetamine use only affected past-year prevalence in 12-17 year olds, not 18-24 year olds.⁶²

In relation to other behaviours, evidence was less consistent. A meta-regression of campaigns targeting physical activity found that age was an important determinant of heterogeneity in relation to reducing sedentary behaviour, with stronger effects in older age groups ($p = 0.054$); each additional 10 years was associated with 27% higher reduction in sedentary behaviour ($p = 0.054$).⁵⁵ However, age was not a significant determinant of heterogeneity in relation to improving overall physical activity. For sexual health mass media campaigns, LaCroix *et al.* found that age was not a predictor of effect size for campaigns.⁵¹

Effects by gender

Seven reviews describe effects by gender; three for tobacco control campaigns,^{27,43,44} one for physical activity,⁵⁵ and two for sexual health.^{51,54}

There was evidence in meta-regression that gender was not an important determinant of heterogeneity for physical activity mass media campaigns, for either reducing sedentary behaviour or increasing activity.⁵⁵

For campaigns on sexual health, there was evidence suggesting slightly greater impact on condom use by females than males in one review, with results stratified by gender, the odds of having used a condom during the most recent sexual encounter were only slightly different at 1.7 (95% CI 1.1-2.7) higher for males and 2.2 (0.5-8.7) higher for females who had been exposed to condom social marketing.⁵⁴ Another review of sexual health mass media campaigns, however, found that no sample characteristics including gender were significant predictors of effect size magnitude for any outcome of interest.⁵¹

Two tobacco reviews found that the impact of gender was inconclusive, with some studies showing positive long-term effects for men, and some for women.^{27,44} One study in the Bala *et al.* review found significant differences in intervention quit rates for women but not for men, compared to controls. A third tobacco review, reported that few of the included studies evaluated the differential effectiveness in subgroups of the sample, but did find modest evidence that campaigns were more effective for women than men in relation only to quit and win and community campaigns.⁴³

Effects by ethnicity

Four reviews described effects by some marker of ethnicity; three were tobacco control reviews,^{27,39,44} and one physical activity.⁵⁸ Guillaumier *et al.* also refers to ethnicity but uses this to identify populations of deprivation, and these results are therefore presented in the section on socio-economic differences.⁴⁰

Evidence regarding media campaign effectiveness and ethnicity was generally inconsistent, inconclusive and mixed. Two reviews of tobacco mass media campaigns observed no consistent or conclusive relationship between campaign effectiveness and ethnicity.^{27,44} One review examined the effect of generic media on Indigenous people compared with general population,³⁹ and found weak evidence that generic tobacco control messages devised for the whole population can be as effective in terms of recall for indigenous populations as the general population, however this may not translate into quit rates.

In a review of physical activity campaigns, Kahn *et al.* included two studies which reported results separately for black people and found mixed evidence: one study showed a decline in % of Black people taking the stairs when the sign contained a generic message; a message specifically designed for a Black population, however, was effective in increasing the percentage of stair users.⁵⁸

Effects by socio-economic group

Five reviews, all focusing on tobacco mass media campaigns, described differential effects by socio-economic group.^{27,37,40,42,44} For four of these reviews, the main aim was to compare effectiveness of campaigns across socio-economic groups or to consider effectiveness specifically within deprived populations. Overall, the evidence suggested that tobacco control campaigns have had inconsistent socio-economic equity effects. However, there is a lack of good quality studies looking at the differential effects of mass media campaigns, especially those aimed at behaviours other than smoking.

In the review by Brown *et al.*,³⁷ twelve studies examined the equity impact of mass media campaigns promoting the use of quitlines and/or NRT (in other words, whether results differed by socio-economic status). Five studies were positive (ie. the campaigns reduced inequality), three neutral (there was no difference in impact by socio-economic status), three were negative (the campaigns were found to increase inequality, and one was unclear for equity impact. Similarly, of eighteen studies examining the equity impact on quitting, three showed a positive equity impact, two were neutral, five negative (including four Quit & Win competitions), two mixed and six unclear.³⁷

The review by Hill *et al.* found evidence that mass media campaigns generated greater awareness of quitlines among less educated smokers, with three out of four US studies which evaluated campaigns promoting local quit lines finding higher awareness among less educated smokers.⁴²

Other reviews of tobacco mass media campaigns found no consistent relationship between campaign effectiveness and educational status,²⁷ or socio-economic status.⁴⁰ Guillaumier *et al.* reported results from several studies, overall finding an inconsistent pattern. Two studies in the review examined measures of campaign exposure and found that campaigns were either less likely or equally likely to be recalled by disadvantaged versus more advantaged smokers. Four studies looked at campaign perceptions: three found no differences in the perceived effectiveness of campaigns regardless of sociodemographic group, and a fourth found that Indigenous Australians perceived a variety of TV ads as more effective than did non-Indigenous Australians. Motivational responses of smokers (calling quitline, promoting quit attempts, quit intentions) were assessed in five studies, with mixed results. Four studies assessed the effectiveness of campaigns in promoting cessation: three campaigns were equally effective, and one campaign was more effective in reducing smoking rates in disadvantaged smokers compared to more advantaged smokers. This review considered the methodological quality of these studies and its main conclusion was that there is poor methodological rigour in research into the effectiveness of mass media campaigns among socially disadvantaged groups.⁴⁰

Richardson *et al.* reported that there was a lack of information regarding the impact of children and young people's socio-economic status on the effectiveness of mass media campaigns.⁴⁴

Effects by pre-campaign measures of behaviour

Two reviews, both of physical activity campaigns, defined sub-populations by their pre-campaign level of physical activity or obesity,^{58,61} and one review of sexual health campaigns defined sub-populations according to pre-campaign sexual activity and use of condoms.⁵¹

One further review focussing on campaigns relating to illicit drug use examined effects according to individuals' sensation-seeking behaviour.⁶³

Two physical activity reviews noted evidence of stronger effects in populations who at baseline were classified as obese (Kahn *et al.*) and sedentary (Ogilvie *et al.*),^{58,61} although overall the evidence was weak, as Kahn *et al.* was a high risk of bias review and in Ogilvie *et al.* the findings related to only two mass media studies in a review with a wider focus. Kahn *et al.* found that posters encouraging stair use were effective in both those classified as obese and those not classified as obese, but the median net increase in % of people taking stairs was greater among the obese group.⁵⁸ Ogilvie *et al.* reported that, examining the two mass media studies in the review, significant net increases in self-reported time spent walking were observed only in the most sedentary subgroup within the study population.⁶¹

Neither prior level of sexual activity nor pre-campaign rate of condom use were significant predictors of effect size magnitude for any outcome of interest in a sexual health review.⁵¹ An illicit drug use review suggested possible stronger effects in an RCT for a subgroup assessed as having high sensation seeking behaviour, but with no formal synthesis.⁶³

Overall strength of the evidence

Table 8 below presents the findings for our overall summary of findings for the effects of mass media on health behaviours. This overall rating summarises review findings, drawing on the principles of the GRADE approach. In particular, we consider the risk of bias of included systematic reviews, potential inconsistency in the results, the extent to which the evidence base reflects behaviour change within a UK context and imprecision in the effect estimates.

While our approach is inspired by GRADE, it has been modified substantially as straightforward implementation is challenging and would have resulted in all assessments being characterised as very low certainty. This would not have allowed the differing levels of certainty to be communicated. However, it is worth noting that these assessments are not comparable to other GRADE Summary of Findings tables.

Table 8: Overall summary of findings for each health topic

Outcome	Behaviours	Intentions	Awareness/ Knowledge	Attitudes	Overall effect	Risk of bias	Inconsistency	Directness	Imprecision	Certainty
Illicit drugs	● L	◀▶ L	◁▷ L	◁▷ L	no effect	Low	Inconsistent (I ² =70%)	Direct	High	Low
Sexual health	▲ L	◁▷ L	▲ L	◁▷ L	positive	Low	Inconsistent (I ² =77.22%, No info for other 2 meta-analyses)	Indirect	Low	Low
Physical activity	● L	△ H	△ L	△ L	no effect	Low	Inconsistent I ² =72% I ² =0% I ² =63%	Direct	High (on the basis of overall physical activity)	Low
Tobacco	◁▷ L	△ L	◁▷ L	◁▷ L	mixed	Low	Inconsistent	Direct	High	Low
Diet	△ L	-	△ L	-	positive	Low	Inconsistent	Direct	High	Very low
Substance use	▲ H	-	-	-	unknown	High	Inconsistent	Direct	High (based on meta-analysis of RCTs)	Very low
Alcohol	-	-	-	-	unknown	-	-	-	-	Very low

Key:

L=Low risk of bias of relevant reviews, H=High risk of bias of relevant reviews

▲ = positive results, statistics provided. (Positive in public health terms, e.g. positive = a decrease in smoking)

△ = positive results, no statistics reported/narrative results

▼ = negative results, statistics provided

▽ = negative results, no statistics reported/narrative results

● = no effect, statistics provided.

O = no effect, no statistics reported/narrative results
◀▶ = mixed results, statistics provided
◁▷ = mixed results, no statistics reported/narrative results

With regard to our certainty in mass media campaigns in achieving a positive impact on public health, we conclude there is:

- Low certainty evidence for positive effects on improving sexual health behaviour, with existing reviews synthesising evidence that is primarily derived from low-income settings.
- Very low certainty evidence of healthier behaviours in relation to diet and substance use.
- Low certainty evidence for no effect on increased physical activity and reduced use of illicit drugs.
- Low certainty evidence for the effect on tobacco being mixed.
- A large amount of variation in effectiveness across the evidence, suggesting factors related to the intervention and context are crucial determinants of effectiveness.
- An absence of evidence about the impact on alcohol consumption.

Summary

This review of systematic reviews published between January 2000 and January 2016 brings together the evidence base on the impact of mass media campaigns on health behaviours (including alcohol use, illicit substance use, diet, physical activity, sexual and reproductive health, and smoking cessation and prevention) for the first time. Overall, the evidence base for the effectiveness of mass media for behaviour change is mixed. First, the amount of literature varies. Of the 36 reviews that met our inclusion criteria, the most commonly studied behaviour was tobacco use followed by sexual health and physical activity. Just three reviews for media campaigns on illicit drugs were identified. A further five systematic reviews looked at campaigns addressing more than one behaviour, and within these only four included content on alcohol and/or diet. However, no single review examining the effectiveness of mass media for addressing alcohol use or diet was found, identifying an important gap in the literature. The strength of evidence from reviews also varies. Using a modified GRADE approach, we found moderate evidence for the positive effects of mass

media campaigns on reducing sedentary behaviour and sexual health. Low certainty evidence for positive impacts on diet was found, although the overall volume of evidence on diet was very limited. The impact of the mass media on tobacco use and physical activity was mixed, but with low certainty evidence in both cases. In contrast, the available and again low certainty evidence on illicit drugs, suggests no impact of mass media. All reviews found considerable variation between individual studies as described in a meta-analysis or narrative synthesis, suggesting variations in implementation of the campaign and evaluation methods may be important.

For treatment seeking, there was low certainty evidence that mass media campaigns can help increase the use of sexual health clinics or services. Whether media campaigns can prompt calls to telephones quitlines for smoking cessation has been fairly extensively studied in five reviews. Overall, the direction of effect looks positive, with campaigns serving to prompt calls to quitlines, but variation in results and the quality of studies was identified – therefore there is only moderate certainty in the strength of this finding.

Mass media campaigns may reach and affect groups in the population differently. Although age differences were not always measured, reviews of tobacco and illicit drug campaigns found mass media appeared to be more effective for young people and particularly younger children than older teenagers. There was modest evidence that mass media outcomes for tobacco, sexual health and physical activity do not differ by gender and no clear consistent evidence was found for ethnicity or socio-economic status. Looking at baseline measures of health behaviours, physical activity campaigns may be more effective for the less active or obese people than others.

Chapter 3: What is the impact of mass media campaigns on alcohol-related behaviour and other outcomes?: Findings from the review of primary studies of alcohol campaigns (Review B)

This systematic review of primary studies of alcohol campaigns (Review B) has been published in full in the journal *Alcohol and Alcoholism*.⁹⁴ The open-access paper is available online here: <https://doi.org/10.1093/alcalc/agx094>, and the supplementary files (including the exclusion criteria and a sample search strategy) are available online here: <https://academic.oup.com/alcalc/article/53/3/302/4796878#supplementary-data>. In this chapter we present a scientific summary of the review.

Background

There are approximately 8,800 alcohol-related deaths annually in the UK⁹⁵ and consumption of alcohol is causally linked with more than 60 medical conditions including seven types of cancer.⁹⁶ In England 7% of adults regularly consume more than current low-risk guidelines⁹⁷ and there are an estimated 1.1 million alcohol-related hospital admissions a year.⁹⁸ There is a need for effective population-level strategies to reduce consumption and prevent related harm.

Review A highlighted a lack of review-level evidence of the effectiveness of mass media in addressing alcohol use. Two reviews included some evidence on alcohol as part of wider reviews of multiple behaviours.^{65,66} However, no single comprehensive review was identified that examined the impact of mass media on alcohol consumption and related outcomes.

Other reviews have shown that mass media campaigns can reduce drink driving in some circumstances^{10,99} but alcohol campaigns may not be effective in school or college campus environments.^{100,101} Other than these topics, evaluations of alcohol-related mass media campaigns have not been comprehensively synthesised in a way that can inform current policy.

Objective

To conduct a systematic review of evidence of the effectiveness of mass media public health campaigns to reduce alcohol consumption and related harms.

Methods

The review protocol was registered with PROSPERO ([CRD42017054999](#))¹⁷ and this systematic review (Review B) has been published in full in *Alcohol and Alcoholism*.⁹⁴ Eligibility criteria are shown in Box 2.

Eight bibliographic databases were searched from date of inception to July 2016: Medline, EMBASE, PubMed, Cochrane Library, Web of Science, SCOPUS, ASSIA and ERIC. Each unique search result was screened for relevance by one of a team of four reviewers. Full text reports of eligible references were assessed for eligibility by one reviewer with random samples checked by a second reviewer. References of included studies were examined for any further potentially relevant studies.

Data were extracted from included studies, with outcomes informed by the project logic model, and a sample were double-extracted by a second reviewer. Studies were assessed for quality using the Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies,¹⁰² with all assessments checked by a second reviewer. Due to study heterogeneity a narrative synthesis was conducted, firstly on behaviour change outcomes and then on behavioural determinants, including social cognitive and campaign exposure outcomes.

Inclusion criteria

Studies of campaigns with the characteristics:

- Purposeful use of mass media channels to influence health behaviours and the individual level determinants of health behaviours
- Mass media channels included television, radio, cinema, online broadcasting, newspapers and magazines, leaflets/booklets, direct mail, outdoor advertising, email and digital media.
- Aimed at reducing alcohol consumption and its determinants
- Multi-component interventions if they assessed the specific effects of a mass media component.

Types of studies:

- Primary research studies
- Any study design
- Reported in English
- Any country
- Reported at least one of the outcomes: alcohol consumption; alcohol-related social cognitive variables (e.g., knowledge, intentions, social norms); media exposure outcomes (e.g., campaign awareness, exposure, understanding); alcohol-related harm; health service usage.

Exclusion criteria

Studies of campaigns with the characteristics:

- Involved individual person-to-person delivery
- Required active engagement before receipt of the message rather than passive message exposure
- Used a baseline measure to tailor or target a subsequent mass media message
- Targeted drink-driving
- Promoted alcohol consumption
- Based in schools
- Targeted college students within university campuses
- Social norms campaigns where it was not evident from the information available that a mass media channel was used

Types of studies:

- Campaign message testing
- Evaluations of alcohol advertisement bans
- Evaluations of warning labels on alcohol products
- Evaluations of online treatment or self-help programmes

Box 2: Eligibility criteria (Review B)**Results**

There were 10,212 unique search results, 170 of which were assessed for eligibility as a full text report (Figure 3). Twenty nine papers were included in the review. They reported 24 different studies that had a range of designs (11 controlled longitudinal; 13 uncontrolled or cross-sectional) and countries (8 USA, 5 Australia, 2 Finland, 2 New Zealand, 2 UK, 1 Canada, 1 Denmark, 1 Italy, 1 Netherlands, 1 Sri Lanka). Television and/or radio were used in 18 studies. Other media channels used were posters, newspapers, pamphlets, emails and

online video. On EPHPP study quality ratings, two were strong,^{78,87} four moderate^{74,84,85,93} and 18 weak.^{70-73,75-77,79-83,86,88-92} The most common reasons for a weak rating were not reporting reliability and validity of data collection tools, a high risk of selection bias and a weak study design.

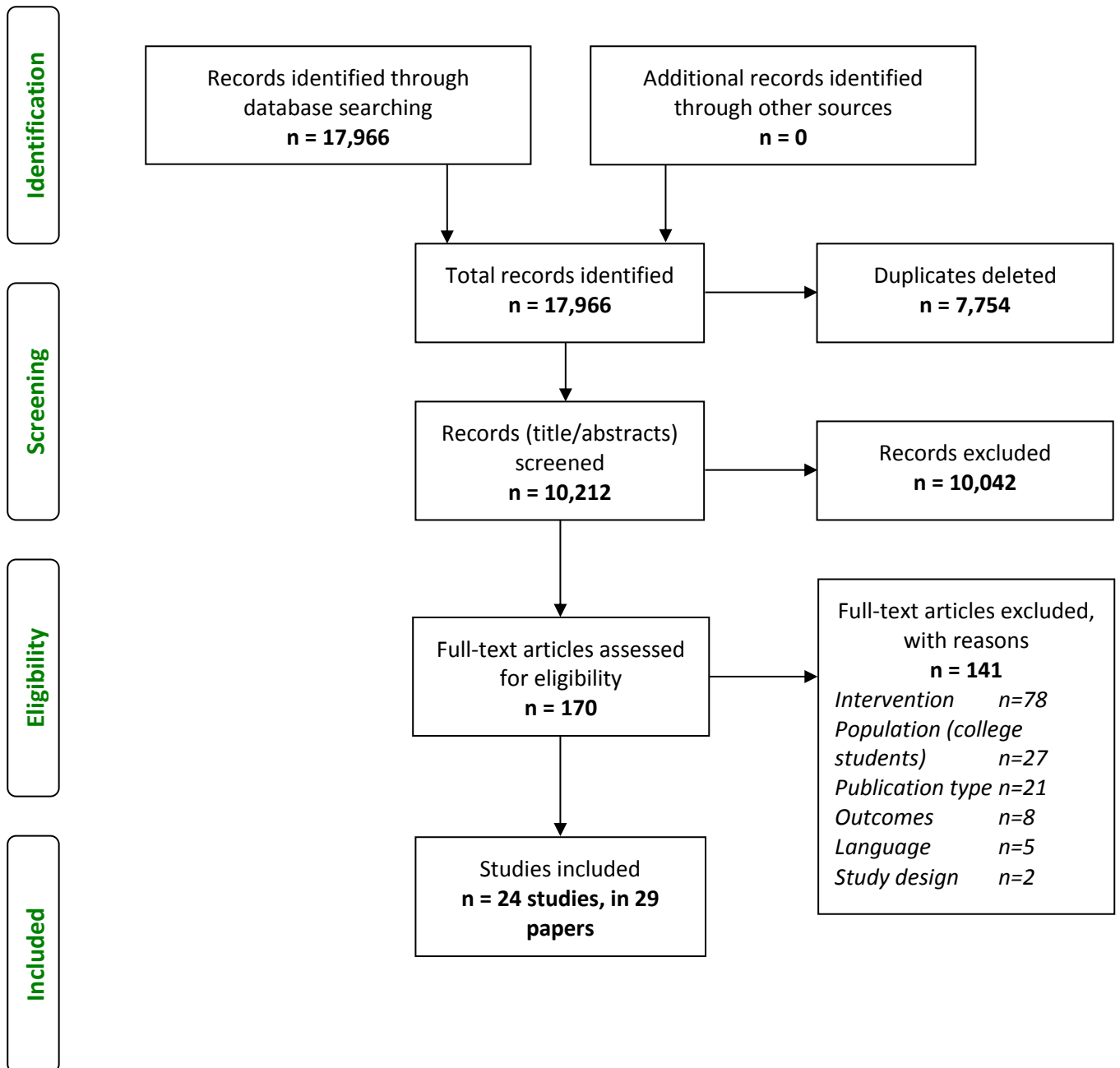


Figure 3: PRISMA diagram of identification and selection of primary studies (Review B)

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Alcohol consumption

There was little evidence of reductions in alcohol consumption associated with exposure to campaigns based on 13 studies reporting this outcome.^{73,74,77-80,82,84,86,87,90,92,93} Six of these studies compared exposed and non-exposed groups, or exposed groups over time, five reporting no statistically significant differences in consumption.^{74,78,82,84,93} One study found a group exposed to a TV and mailed letter campaign decreased their consumption on a typical day by 47%, contrasting with increases in groups receiving either the TV or letter components or neither.⁷³ Other studies examined associations between campaign viewing or awareness and consumption: one reported that increases in awareness in older adolescence, but not younger adolescence, was associated with decreases in binge drinking,⁸⁷ one reported campaign viewing significantly predicted drinks consumed⁹² and two found no significant difference in consumption.^{77,86}

Treatment/information seeking

There was some evidence, from four weak quality studies, that campaigns generated increases in treatment seeking or information seeking.^{70,72,79,86} For example, referrals for alcoholism were reported to have increased by 65% following a campaign.⁸⁶

Intentions and motivation

Three studies reported intentions to reduce alcohol consumption. In one study, those who reported they had seen a campaign reported an increase in intentions to decrease alcohol use whereas others decreased their intentions.⁹² Another study found an increase in the proportion reporting they were likely to reduce their consumption from pre-test to post-test.⁷⁷ In the other study the impact of the campaign on intentions was not well described.⁹³ In a single study reporting motivation to reduce consumption, half of drinkers recognising

the campaign reported that it made them feel either very or somewhat motivated to reduce their consumption.⁷⁷

Beliefs and attitudes

Five studies reported alcohol-related beliefs or attitudes with mixed findings.^{73,74,76,86,93} For example, one study reported an increase in support for some policies aimed at limiting consumption but not for others.⁷⁴

Knowledge

There was evidence that alcohol-related knowledge increased based on eight studies. These included knowledge of unit consumption guidelines,^{77,79} cancer risk,⁷⁷ the risks of alcohol use during pregnancy,^{75,80,85} sources of support for problem drinkers,⁸⁶ and general knowledge about alcohol.^{83,93} For example, there was a significant improvement in knowledge of the risks of alcohol use during pregnancy in an exposed group compared to a control group.⁸⁵

Other outcomes

Other studies reported self-efficacy,^{78,83} social norms,⁹² campaign interaction or discussion,^{71,84,85,88,89} recall or recognition of campaigns,^{70,73,75,77,79,81,82,84-86,88-90} and attitudinal or emotional responses.^{78,79} Evidence was strongest for recall, where proportions remembering campaigns or their messages were generally high.

Discussion

Findings from this review of primary studies published by July 2016 suggest that mass media campaigns have not reduced alcohol consumption, although most did not state that they directly aimed to do so and the evidence is limited by mostly weak study designs and self-reported outcomes. Campaigns can be recalled and increase knowledge, especially in areas where knowledge was initially low (e.g. unit consumption guidelines or cancer risk), suggesting they can impact important precursors to behaviour change. However, alcohol marketing and pro-alcohol cultural norms create a challenging environment in which alcohol health promotion campaigns must operate.

Conclusion

Mass media public health campaigns about alcohol can often be recalled by individuals, and are associated with changes in knowledge, attitudes and beliefs about alcohol. There is little evidence campaigns reduced alcohol consumption but most studies did not report consumption as an outcome. Mass media can however, impact outcomes that could lead to support for other public health actions to reduce alcohol consumption and harm.

Chapter 4: What is the cost-effectiveness of mass media campaigns? Evidence from the cost-effectiveness review (Review C)

Background

Mass media campaigns have high upfront costs, and evidence of effectiveness is not sufficient to conclude that they offer value for money. However, the wide reach of mass media campaigns means that they have the potential to offer significant benefits at a low cost per head. The cost-effectiveness of mass media campaigns is an essential consideration for policy makers.

Methods

We conducted a rapid review of reviews of the cost-effectiveness of mass media campaigns.

Literature searches for reviews of economic evaluations

We combined relevant reviews identified in the original search (Chapter 2) with additional reviews and systematic reviews identified using a literature search which specifically sought to identify reviews of economic evaluations published between January 2000 and January 2017. We conducted a rapid literature search using Web of Science and Google Scholar. The search strategy is summarised in Appendix 5.

Inclusion and exclusion criteria

We included reviews or systematic reviews describing the cost-effectiveness of paid mass media interventions (including multi-component interventions where a major component was mass media) for the relevant health topics. The cost-effectiveness findings had to be described in results section, even if the findings were that there were no relevant studies. Included reviews were required to assess economic studies which evaluated both costs and benefits of mass media campaigns (i.e. full economic evaluations, not just intervention costs

or cost savings). Systematic reviews were defined as those including both a systematic literature search and quality assessment of included papers.

We excluded reviews of reviews and papers which assessed industry-funded mass media campaigns.

Results

Following abstract screening we screened the full texts of 11 reviews identified in the original searches, and a further 29 studies that were identified in the new search. Following full text screening we included 20 reviews.

Synthesis of findings

Of the 20 reviews which met the inclusion criteria, 13 were systematic reviews,^{27,35,48,61,103-111} and 7 were non-systematic reviews.^{24,112-117} The characteristics of the reviews are summarised in Table 9 and Table 10.

Eight reviews were on the topic of smoking,^{24,27,35,104,110,111,113,114} four on sexual health,^{48,103,107,109} two on physical activity,^{61,106} and two on diet.^{116,117} Four reviews covered multiple behaviours.^{105,108,112,115}

Four of the included reviews had mass media campaigns as the sole focus *and* reviewing economic evaluations as a specific aim of the review.^{48,104,105,111} Four of the reviews had mass media campaigns as the sole focus but did *not* have reviewing economic evaluations as a specific aim of the review.^{24,27,35,109} Ten of the included reviews did not have mass media campaigns as the sole focus but *did* have reviewing economic evaluations as a specific aim of the review.^{103,106-108,110,112,113,115-117} Two of the reviews did not have mass media campaigns as the sole focus *or* reviewing economic evaluations as a specific aim of the review, but reported on economic evaluations in the results section of the review.^{61,114}

Eight of the included reviews included no relevant studies.^{24,27,48,61,103,105,107,109} Nine included 1-2 relevant studies.^{35,106,108,110,113-117} Three reviews included 3 or more relevant studies, with a maximum of 11.^{104,111,112} Of these, two reviews were on the topic of smoking,^{104,111} and one was a mixed topic review but all of the relevant included studies were on smoking.¹¹²

A total of 15 individual primary studies were reported in the reviews. The characteristics of the primary studies are summarised in Table 11, based on the information extracted from the reviews. Eleven primary studies were on smoking,¹¹⁸⁻¹²⁸ two on physical activity,^{129,130} and two on diet.^{131,132} The majority of the primary studies were from the UK and the USA.

Taken together, the reviews and the findings of the primary studies within the reviews provide moderate evidence that tobacco control mass media campaigns can be cost-effective. There is weak evidence in relation to diet – although this is restricted to reductions in salt intake – and physical activity. There is no evidence in relation to the cost-effectiveness of sexual health campaigns, despite efforts to identify such evidence in systematic reviews.

Summary

From our rapid review of reviews (published between January 2000 and January 2017) of the cost-effectiveness of mass media campaigns, evidence on cost-effectiveness was extremely limited for all health topics except smoking. The finding that there is moderate evidence that tobacco control mass media campaigns can be cost-effective should be considered in the context of the evidence from the effectiveness review. The cost-effectiveness evidence base is likely to be biased as only effective campaigns have been evaluated. Furthermore, because the majority of the evidence is from the UK and the USA, the cost-effectiveness findings have limited generalisability.

Table 9: Summary of included reviews (Review C)

Paper	Health topic	Review aim	Review type	Is mass media sole focus of the review?	Is review of economic evaluations the/a specific aim of review?	Total studies included	Number of relevant studies
Brinn (2010)³⁵	Smoking	To evaluate the effectiveness of mass media interventions to prevent smoking in young people.	SR	Yes	No	7	1
Durkin (2011)²⁴	Smoking	To summarise the impact of mass media campaigns on promoting quitting among adult smokers overall and for subgroups; the influence of campaign intensity and different channels; the effects of different message types.	NSR	Yes	No	26	0
Atusingwize (2014)¹¹¹	Smoking	To systematically and comprehensively review economic evaluations of tobacco control mass media campaigns.	SR	Yes	Yes	11	11
Bala (2013)²⁷	Smoking	To assess the effectiveness of mass media interventions in	SR	Yes	No	11	0

		reducing smoking among adults.					
Flack (2007)¹⁰⁴	Smoking	Assesses the current evidence for the cost-effectiveness of mass media-led smoking cessation interventions	SR	Yes	Yes	10	3
Kahende (2009)¹¹³	Smoking	To review the existing literature on economic evaluations of tobacco control interventions	NSR	No	Yes	42	2
Lantz (2000)¹¹⁴	Smoking	To provide a comprehensive review of interventions and policies aimed at reducing youth cigarette smoking in the US	NSR	No	No	Not reported (NSR)	1
Raikou (2007)¹¹⁰	Smoking	To undertake a review of the evidence on cost-effectiveness relating to smoking prevention strategies amongst young people focusing on mass media interventions and point of sale measures.	SR	No (but key focus)	Yes	5	2
Belaid (2016)¹⁰³	Sexual health	To synthesise the evidence on the implementation, costs, and cost-effectiveness of demand generation interventions and their effectiveness in	SR	No	Yes	20	0

		improving uptake of modern contraception methods in LMIC					
French (2014)⁴⁸	Sexual health	An exploratory review was conducted to assess research examining awareness, acceptability, effects on HIV testing, disclosure and sexual risk, and cost-effectiveness of HIV mass media campaigns targeting MSM	SR	Yes	Yes	12	0
Lorenc (2011)¹⁰⁷	Sexual health	To systematically review the evidence on the effectiveness and cost-effectiveness of interventions to increase the uptake of HIV screening among MSM	SR	No	Yes	13	0
Vidanapathirana (2005)¹⁰⁹	Sexual health	To assess the effect of mass media interventions and the most effective form of mass media intervention at a general population level or in specific target populations, in relation to changes in HIV testing	SR	Yes	No	14	0
Laine (2014)¹⁰⁶	Physical activity	To synthesise the evidence on the cost-effectiveness of	SR	No	Yes	10 (including 1 SR)	1

		population-level interventions to promote physical activity					
Ogilvie (2007)⁶¹	Physical activity	To assess the effects of interventions to promote walking in individuals and populations.	SR	No	No	48	0
Hutchinson (2006)¹¹²	Multiple (smoking cessation, sexual health, and substance abuse)	To examine the available literature on the cost-effectiveness of health behaviour change communication programs, focusing on communication interventions involving mass media	NSR (some consideration of quality but not formal quality assessment)	No ('health communication' includes mass media, counselling, interpersonal communication)	Yes	45	3
Jacob (2014)¹⁰⁵	Multiple	To determine the costs, benefits and overall economic value of communication campaigns that included mass media and distribution of specified health-related products at reduced price or free of charge	SR (but limited quality assessment)	Yes	Yes	15	0
Mason (2008)¹⁰⁸	Multiple	This paper reports findings from a systematic review of the economic evidence relating to planning,	SR	No	Yes	8	1

		design, delivery or governance of health promotion interventions					
McKinnon (2016)¹¹⁵	Multiple (Obesity – Nutrition & physical activity)	To summarise cost-benefit and cost-effectiveness studies of obesity-related policy/environmental interventions for youth and the general population	NSR	No	Yes	27	2
Wang (2011)¹¹⁶	Diet	To summarise the evidence on the cost-effectiveness of interventions designed to reduce sodium intake	NSR	No	Yes	11	1
Wang (2013)¹¹⁷	Diet	To summarise recent economic evaluation of interventions to reduce salt intake	NSR	No	Yes	6	1

Table 10: Characteristics and conclusions of included reviews (Review C)

Paper	Country of relevant studies	Target population in relevant studies	Study design of included studies	Perspective of included studies	Relevant findings	Amount of information relevant information reported (subjective) – high,	Authors’ conclusions about cost-effectiveness of mass media campaigns	Cost-effectiveness conclusions (reviewer’s interpretation)

						medium, low		
Brinn (2010)³⁵	USA: Secker Walker	Youth	CEA	Not reported	See Table 11.	Low	None	Provides weak evidence that tobacco control MMC to reduce smoking in young people are cost-effective
Durkin (2011)²⁴	n/a	n/a	n/a	n/a	None	Low	None	None of the included studies assessed cost-effectiveness of mass media campaigns.
Atusingwize (2014)¹¹¹	Australia: Hurley and Matthews; UK: Kotz, Brown, Stevens, Ratcliffe (Scotland) Raikou; USA: Villanti, Fishman, Secker Walker, Holtgrave;	General population: Hurley and Matthews, Kotz, Brown; Higashi; Adults: Ratcliffe, Villanti; Youth: Secker-Walker, Fishman, Raikou; Specific communities: Stevens (Turkish community in Camden & Islington)	CEA: Hurley, Kotz, Brown, Ratcliffe, Secker- Walker, Fishman, Raikou, Stevens CUA: Hurley, Villanti, Holtgrave, Raikou, Higashi	Healthcare: Hurley Organisational: Kotz, Brown, Ratcliffe, Secker-Walker; Governmental: Higashi; Public health sector: Raikou; Societal: Villanti, Holtgrave Local authority: Stevens	See Table 11	High	The evidence on the cost effectiveness of tobacco control mass media campaigns is limited, but of acceptable quality and consistently suggests that they offer good value for money	Provides moderate evidence that tobacco control mass media campaigns can be cost-effective, but the evidence is likely to be biased as only effective campaigns have been evaluated.

	Vietnam: Higashi							
Bala (2013)²⁷	n/a	n/a	n/a	n/a	None	Low	None	None of the included studies assessed cost-effectiveness of mass media campaigns.
Flack (2007)¹⁰⁴	UK: Ratcliffe (Scotland), Stevens; USA: Secker-Walker	Adults: Ratcliffe; Youth: Secker-Walker; Specific communities: Stevens (Turkish community in Camden & Islington)	CEA: Ratcliffe, Stevens, Secker-Walker	Organisational: Ratcliffe, Secker-Walker; Local Authority: Stevens	See Table 11	Medium	Overall there was limited information concerning the cost-effectiveness of mass media-led interventions aimed at smoking cessation.	Provides moderate evidence that tobacco control mass media campaigns can be cost-effective.
Kahende (2009)¹¹³	UK: Ratcliffe (Scotland); USA: Secker-Walker	Adults: Ratcliffe; Youth: Secker-Walker	CEA	Not reported	See Table 11	Low	No specific conclusions about MMC. General conclusion: Although there are obvious gaps in the literature, the existing studies show that in almost every case, tobacco	Provides weak evidence that tobacco control MMC can be cost-effective

							control programmes and policies are either cost-saving or highly cost-effective.	
Lantz (2000)¹¹⁴	USA: Secker-Walker	Youth: Secker-Walker	CEA: Secker-Walker	Organisational: Secker-Walker (Not reported in review)	See Table 11	Low	It is believed that mass media interventions can have a significant and cost effective impact on youth smoking behaviour.	Provides weak evidence that mass media campaigns to prevent uptake of smoking in young people are cost-effective
Raikou (2007)¹¹⁰	USA: Secker-Walker, Fishman	Youth: Secker-Walker, Fishman	CEA: Secker-Walker, Fishman	Organisational: Secker-Walker; Societal: Fishman	See Table 11	Medium	The general conclusion has to be that (point of sale measures and mass media) are cost-effective, often highly so. Whilst there is a very limited number of studies...all studies reviewed find interventions cost-effective.	Provides weak evidence that mass media campaigns to prevent uptake of smoking in young people can be cost-effective

Belaid (2016)¹⁰³	n/a	n/a	n/a	n/a	None	Low	None	None of the included studies assessed cost-effectiveness of mass media campaigns.
French (2014)⁴⁸	n/a	n/a	n/a	n/a	None	Low	None of the included studies examined cost-effectiveness of the campaigns.	None of the included studies assessed cost-effectiveness of mass media campaigns.
Lorenc (2011)¹⁰⁷	n/a	n/a	n/a	n/a	None	Low	None	None of the included studies assessed cost-effectiveness of mass media campaigns.
Vidanapathirana (2005)¹⁰⁹	n/a	n/a	n/a	n/a	None	Low	Additional research is needed to identify the effectiveness of different types of mass media interventions, the cost effectiveness of the interventions,	None of the included studies assessed cost-effectiveness of mass media campaigns.

							and characteristics of messages.	
Laine (2014)¹⁰⁶	Belgium: De Smedt	Not reported	Not reported	Not reported	See Table 11	Low	None. General conclusions: The number of studies related to the cost-effectiveness of population-level physical activity studies is limited.	Provides weak evidence that mass media campaigns which aim to increase physical activity are cost-effective.
Ogilvie (2007)⁶¹	n/a	n/a	n/a	n/a	None	Low	Only six studies included even a rudimentary economic evaluation. We were therefore unable to synthesise any meaningful data with which to compare these aspects.	None of the included studies assessed cost-effectiveness of mass media campaigns.
Hutchinson (2006)¹¹²	UK: Ratcliffe (Scotland), Stevens; US: Secker Walker	Adults: Ratcliffe; Youth: Secker-Walker; Specific communities: Stevens (Turkish community in	CEA: Ratcliffe, Stevens, Secker-Walker	Organisational: Ratcliffe, Secker-Walker; Local Authority: Stevens	See Table 11	Medium	There is a clear need for more studies of the cost-effectiveness of health communication interventions.	Provides moderate evidence that tobacco control MMC can be cost-effective. No evidence

		Camden & Islington)					The majority of studies of the cost-effectiveness of health communication that were reviewed here do not pay sufficient attention to methodological rigor.	for other behaviours.
Jacob (2014)¹⁰⁵	n/a	n/a	n/a	n/a	None	Low	The studies included do not provide evidence to reach a conclusion about the economic merit of health communication campaigns that use mass media combined with product distribution.	None of the included studies assessed cost-effectiveness of mass media campaigns.
Mason (2008)¹⁰⁸	UK: Ratcliffe (Scotland)	General population: Ratcliffe	CEA: Ratcliffe	Organisation: Ratcliffe	See Table 11	Low	None	Provides very limited evidence that tobacco control MMC to reduce

								smoking in young people are cost-effective.
McKinnon (2016)¹¹⁵	Belgium: De Smedt; USA: Peterson	Youth: Peterson; Not reported: De Smedt	CUA: De Smedt; CEA: Peterson	Not reported	See Table 11	Low	None. General conclusions note the relative paucity of studies located conducting cost-benefit or cost-effectiveness assessments.	Provides weak evidence that mass media campaigns which aim to increase physical activity can be cost-effective.
Wang (2011)¹¹⁶	Argentina: Rubinstein	General population: Rubinstein	Generalised CEA: Rubinstein	Not stated: Rubinstein	See Table 11	Low	None	Provides weak evidence that mass media campaigns to reduce salt intake are cost-effective.
Wang (2013)¹¹⁷	Vietnam: Ha	General population: Ha	CUA: Ha	Not reported: Ha	See Table 11	Low	None	Provides weak evidence that mass media campaigns to reduce salt intake are cost-effective.

Table 11: Characteristics and findings of primary studies included in reviews (Review C)

Author	Year	Health topic	Country	Target population	Study design	Perspective	Relevant findings
Hurley ¹¹⁸	2008	Smoking	Australia	General population	CUA	Healthcare	Prevention of 55,000 deaths, gains of 323,000 life years, 407,000 QALYs, healthcare cost savings \$A740.6 million. Campaign remained cost saving in sensitivity analysis
Kotz ¹¹⁹	2011	Smoking	UK	General population	CEA	Organisational	ICER £82.24 per LYG (95% CI 49.7 to 231.6) for 35–44-year-olds. £114.29 <35 years, £76.19 for 45–54 years and £97.45 for 55–64 years. Campaign remained cost effective in sensitivity analysis.
Brown ¹²⁰	2014c	Smoking	UK	General population	CEA	Organisational	ICER for total population £558 per LYG (95% CI 126 to 989). £414 for 35–44-year-olds, £607 for <35-year-olds, £417 45–54-year-olds and £566 for 55–64-year-olds. Campaign remained cost-effective in sensitivity analysis
Stevens ¹²¹	2002	Smoking	UK	Turkish community in London	CEA	Local authority	Study reports mean cost effectiveness drawn from probability distribution of possible outcomes in sensitivity analysis. ICER £105 per LYG (95% CI £33 to 391) ICER 825 per 1-year quitter (95% CI 300 to 3500)
Raikou ¹²⁸	2008	Smoking	UK	Youth	CEA, CUA	Public health sector	Base case: £49 per QALY gained £362 per LYG. Campaign remained cost effective in all sensitivity analyses
Ratcliffe ¹²²	1997	Smoking	UK (Scotland)	Adults	CEA	Organisational	Cost per quitter £168-363, Cost per discounted LYG £304-£656 when parameters are varied. [Results reported in 2005 US\$ in Kahende: \$341-748 per quitter \$617 – 1330 per LYG.
Villanti ¹²³	2012	Smoking	USA	Adults	CUA	Societal	Base case ICER \$37 355. Sensitivity analysis: 95% uncertainty interval \$10 779– 204 976 per QALY

Fishman¹²⁴	2005	Smoking	USA	Youth	CEA	Societal	4 year media campaign combined with \$1 tax increase. If cost=cost of media campaign, cost/LYG = \$528 (low-cost campaign with 3% discount rate) -£19,957 (high-cost campaign with 7% discount rate) (£615-23,264 in \$2006) If cost=campaigns, changes in HC costs and tax revenue, cost saving per LYG = \$583,606-1,449,894 (680,310-1,690,141 in \$2006)
Secker-Walker¹²⁵	1997	Smoking	USA	Youth	CEA	Organisational	(Mass media + educational programme c/w educational programme alone) Community level: cost per smoker averted \$754 (95% CI 531-1296), cost per LYG at 3% DR \$696 (95% CI 445-1269) National level: cost per smoker averted \$162, cost per LYG at 3% DR \$138 (95% CI 88 to 252) Campaign remained cost effective in sensitivity analysis. [Costs reported in 2005 US\$ in Kahende: Cost per smoker averted \$939, Cost per LYS \$867 (if campaign run throughout US)]
Holtgrave¹²⁶	2009	Smoking	USA	Youth	CUA	Societal	Base case: 178 290 QALYs gained. Cost-saving. Optimistic case: 1,050,000 QALYs, cost saving. Pessimistic case: \$4302 per QALY
Higashi¹²⁷	2011	Smoking	Vietnam	General population	CUA	Governmental	Without healthcare cost offset: VND 78,300 per DALY averted (95% CI 437 000 to 176 300). With cost offset: Campaign dominates
De Smedt¹²⁹	2012	Physical activity	Belgium	General population	CUA	Not reported	Model-based (20 years). In a local-level community campaign to reduce sedentary time and increase walking the intervention was estimated to improve the average QALY by 0.16 to give 12.23 QALYs for men, and by 0.11 to give 12.77 QALYs for women. Total costs

							decreased by 576€ to 2963€ and by 427€ to 2454€, respectively. (€2009). Laine converted physical activity into metabolic equivalent of task: Cost per MET-h gained/person \$0.014. This is lower than for many of the other interventions assessed.
Peterson¹³⁰	2008	Physical activity	USA	Youth	CEA	Not reported	Statewide social marketing media campaign to promote physical activity to teens. Average cost of the campaign calculated at \$4.01 per person to see an ad, \$7.35 per person to consider being more active, and \$8.87 per person increase physical activity. Billboards resulted in the greatest cost-effectiveness. (\$2004)
Ha¹³¹	2011	Diet	Vietnam	General population	CUA	Not reported	A mass media education programme to reduce salt intake is cost-effective (US\$ 118/DALY averted). Most cost-effective of 23 strategies to reduce CVD in Vietnam.
Rubinstein¹³²	2009	Diet	Argentina	General population	Generalised CEA	Not reported	The average cost-effectiveness ratio [measured in Argentine pesos (ARS \$)] per DALY saved for a mass-media campaign to reduce CVD was \$547 (not strictly a diet campaign)

Chapter 5: What characteristics of mass media campaigns are associated with effectiveness?

Overview

In this chapter we review and analyse evidence regarding the characteristics of mass media campaigns which may be associated with effectiveness. We firstly consider the use of adopting theoretical frameworks encompassing communications and/or behavioural theories in the development, implementation and evaluation of campaigns. We then consider the features of campaign design, including type of media channel used, intervention duration and intensity; intervention content (type of messages, targeting strategies and source) associated with effectiveness. Finally, we consider the evidence on the impact of intervention scale i.e. whether campaigns are implemented at local, regional or national level.

This chapter seeks to address the following study objectives:

- *Objective 2. Examine the components of messages that can be effectively communicated through mass media*
- *Objective 3. Explore how different types and forms of media campaigns can reach and be effective with different target populations (particularly disadvantaged groups)*
- *Objective 4. Assess new or emerging evidence about campaigns that employ different forms of media (including new media)*
- *Objective 5. Examine the relationship between local, regional and national campaigns and evidence of effectiveness where this exists*

The first section of this chapter describes a review of reviews of the effectiveness of campaign characteristics based on the reviews identified for Chapter 2 (Review A). This review included systematic reviews published between January 2000 and January 2016, but it identified limited evidence on the effectiveness of different campaign characteristics, particularly in relation to the UK context and evidence on new media. However, the

research team was aware of recent primary studies which have attempted to shed light on these and which are relevant to UK stakeholders, so we subsequently conducted an additional review to identify primary evidence from UK studies (Review D). The second section of this chapter therefore describes a review of primary studies (published between January 2011 and September 2016) which provide recent evidence on campaign characteristics conducted in the UK.

Methods: Systematic review of reviews

The methods for the review of reviews have previously been described in Chapter 2. From the reviews included in Chapter 2 we identified reviews which examined mass media campaign characteristics and synthesised relevant content.

Evidence from the reviews was reviewed and synthesised around the following characteristics of mass media campaigns: theoretical frameworks, intervention duration and intensity, mass media channels used, and intervention content (messages, targeting and source) and intervention scale.

Theoretical frameworks

Given that interventions developed with an explicit theoretical framework are considered to be more likely to be effective than those lacking any theoretical base,¹³³ we considered that it was important to identify any theories used in the development, implementation and evaluation of campaigns in relation to their effectiveness and whether they had used multiple theories to achieve multiple goals. We returned to all the original included review papers to search the full texts for theory in detail. The earlier data extraction did not always include mentions of theories within introductions and discussions of the papers. We defined a theoretical framework in broad terms as a set of interrelated concepts, definitions, and propositions that explains or predicts events or situations by specifying relations among variables. From our reading of the reviews, we anticipated that theoretical frameworks would encompass two broad areas: communication theories and behaviour change

theories, and that these theories would offer different explanatory insights. For instance, communications theories might help us to understand communication processes in the context of campaigns, such as theories underpinning how best to create and target messages. Whereas behavioural change theories might help explain how different people might respond to such messages. By being inclusive, we considered this would provide a comprehensive analysis of the conceptual thinking underpinning any mass media interventions, and identify the important features that might move people through pathways from increased awareness to eventual behaviour change.

Mass media channels used and interactivity

Mass media campaigns can be run via traditional media channels such as television, radio, cinema, newspapers, magazines and billboards, or via new digital media including websites, pop-up and banner ads, QR codes, viral marketing, and social media. New media often feature an element of interactivity (e.g. liking, sharing or commenting on content, downloading campaign apps). This ability to actively engage with a campaign may be associated with increased effectiveness of public health campaign. We have assessed the evidence relating to the different media channels used in campaigns, including the types of channels used and the use of single vs. multiple channels, and on the use of new interactive media.

Intervention duration and intensity/exposure

Duration refers to the overall length of time a campaign is in operation. Intensity and exposure refer to the overall 'strength' or 'dose' of a campaign, and can be measured in a number of different ways: the number of different advertisements or media materials produced, the number of times an advertisement is shown, the amount of media spend, the size of the audience reached by the campaign or the percentage of the audience in a given region or area which had a potential opportunity to see the campaign. Duration and intensity/exposure are often closely related, in that the longer a campaign runs, the more likely the audience is to be exposed to it. The two are therefore discussed together in this chapter.

Intervention content: messages, targeting and source

We have examined the evidence on the impact of different types of campaign content. We defined 'message' as referring to the types of messages used in campaigns (for example, 'positive' versus 'negative' messages, or messages containing information effects of the behaviour or advice on how to change behaviour). 'Targeting' referred to whether the campaign as a whole or specific campaign elements were intentionally targeted at specific population groups. Because the strategic decision regarding targeting was often strongly bound up with choice of messages, these two elements are discussed together. 'Source' refers to the apparent source of the message, and includes the person delivering the message (for example the use actors or testimonials from real people) and the campaign funder (e.g. government, charities, or pharmaceutical companies). As this is likely to be associated with the type of message used and the intended target group, this is also discussed in this section.

Intervention scale: local, regional and national campaigns

Even in the context of evidence that mass media campaigns featuring particular characteristics are likely to be effective, decision makers need to consider how the scale of a campaign may influence its impact. We review the published evidence which considers the differential impact of local, regional and national campaigns.

Results: Systematic review of reviews

Use of theory: Findings from review of reviews

Table 12 summarises the number of included reviews of mass media campaigns which examined various aspects of theory, and the various behaviour change theories mentioned in the reviews.

Table 12: Reviews which examined theory

No. of reviews with theory as integral to review process	8: Brown (2012) ⁵⁶ , Byrne (2005) ⁶⁵ , Carter (2015) ⁴⁷ , Kahn (2002) ⁵⁸ , Leavy (2011) ⁵⁹ , Matson-Koffman (2005) ⁶⁰ , Robinson (2014) ⁶⁹ , Werb (2011) ⁶³
No. of reviews listing theories in primary studies	7: Bala (2013) ²⁷ , Brinn (2010) ³⁵ , Ferri (2013) ⁶² , Finlay (2005) ⁵⁷ , French (2014) ⁴⁸ , LaCroix (2014) ⁵¹ , Leavy (2011) ⁵⁹
No. of reviews analysing the effect of theories	1: Ferri (2013) ⁶²
No. of reviews listing behaviour change theories	5: Bala (2013) ²⁷ , Brinn (2010) ³⁵ , Finlay (2005) ⁵⁷ , French (2014) ⁴⁸ , Leavy (2011) ⁵⁹
Behaviour change theories listed: Theory of reasoned action, theory of behaviour, stages of change, health belief model, social learning theory, social cognitive theory, trans-theoretical model, social reinforcement for behaviour change, social diffusion theory	
No. of review listing communication theories	4: Bala (2013) ²⁷ , Finlay (2005) ⁵⁷ , French (2014) ⁴⁸ , Leavy (2011) ⁵⁹
Communication theories listed: Social marketing framework, communication theory	
No. of reviews with no focus on theory	23

The majority of these reviews did not include a focus on theories or conceptual frameworks or models and therefore there was little evidence on the role of theory plays in the effectiveness of the intervention. Eight reviews incorporated theory into the process of their work. Three used logic models to frame their research questions and to identify the outcomes relating to their research.^{47,56,58} These models were not adjusted in the light of the results from the review. One review used the presence of a theoretical framework as part of its inclusion criteria, but did not refer to the theories in the primary studies in their results section (Byrne et al. 2005).⁶⁵ Leavy *et al.* used the hierarchy of effects (HOE) framework to specify levels of impact to typify outcomes.⁵⁹ Matson-Koffman *et al.* and Robinson *et al.* used theoretical framings to provide the rationale for their reviews.^{60,69} Finally, Werb *et al.* used theory to explain the findings of their review.⁶³

Seven reviews listed the theories they found in their primary studies. Five of these listed behaviour change studies,^{27,35,48,57,59} and four mentioned communication theories, notably social marketing.^{27,48,57,59} LaCroix *et al.* mentioned that 45% of the studies in their review were theory based.⁵¹

In terms of relating theory to effectiveness, in their analysis of the effects of mass media campaigns on drug use, Ferri *et al.* discovered that two studies based on social learning theory and the social ecological framework produced better results, whereas the study based on the social influence approach favoured the control group.⁶²

Mass media channels used and interactivity: Findings from review of reviews

Table 13 summarises the number of included reviews which examined media channels or interactivity as potential mediators of effectiveness.

Table 13: Reviews which examined media channels and interactivity

No. of reviews which focus on channels used and analyse effects	1: Derzon (2002) ⁶⁶
No. of reviews which focus on channels used	4: Bertrand (2006) ⁴⁶ , Jepson (2006) ⁴³ , Mozaffarian (2012) ⁶⁸ , Richardson (2008) ⁴⁴
No. of reviews which focus on interactivity and analyse effects	1: Swanton (2015) ⁵³
No. of reviews with no focus on channels used and interactivity	33

Although most of the reviews included information on the media channels used in the individual included studies, most simply listed them when summarising the characteristics of the included studies, and did not examine media channels or degree of interactivity as mediators of campaign outcomes, or discuss the potential relationship between channels and interactivity and effectiveness. The lack of attention paid to interactivity is unsurprising in the older reviews whose included studies would have pre-dated the development of new

interactive media. Findings from the five reviews which reported findings specifically relating to channels are summarised below.

Derzon *et al.* conducted a meta-analysis comprising 72 studies of mass media substance use campaigns, with media channels used (radio, television, video or print) as one of the sets of variables in the analysis.⁶⁶ Overall, the analysis found that reduced substance use behaviour was associated with exposure to all the different media channels, but that radio was associated with the greatest relative effects ($\Delta = .10$) and print with the least ($\Delta = .04$). For attitude outcomes, the relative effects were greater for those exposed to video and print rather than other channels. Video was associated with particularly large relative effects on substance-use knowledge. In conclusion, the review authors stated that with regard to media channel, messages communicated via video were associated with larger improvements in knowledge, attitudes and behaviour than campaigns which did not use video. It is likely that most of the video-based campaigns would have been implemented in school settings and would have involved discussion and other informational and educational input; in other words, in a quite different context than general population mass media campaigns on broadcast media. The age of the Derzon review (published in 2002) means that some of the studies are likely to be quite old, which again limits the relevance of the findings to the present UK context.

A review of mass media campaigns on HIV/AIDS-related behaviour among young people in developing countries specifically examined the strength of the evidence for the effects of three types of mass media interventions (radio only, radio with supporting media, or radio and television with supporting media) and assessed whether these interventions reach the threshold of evidence needed to recommend widespread implementation.⁴⁶ One of the studies included in the review was radio only. Six of the studies evaluated interventions using radio with other supporting media (for example, written materials, videos, posters, theatre performances, school workshops). The remaining eight interventions involved television and radio with other supporting media.

The review reported that the one radio only campaign showed mixed results regarding awareness of a helpline but no improvements in social norms, interpersonal communication

about HIV/AIDS or various measures of condom use.⁴⁶ Of the six studies using radio with other supporting media, all reported some measure of knowledge gain, although results tended not to be significant, and most studies showed some positive effects on skills, knowledge, interpersonal communication and social norms. Findings relating to various sexual behaviours were mixed, although the weight of the evidence across studies reporting condom use was strongly positive.

Eight studies examined the effect of campaigns using television and radio with other supporting media. Evaluations of this type of intervention generally showed improvements in knowledge and skills related to HIV/AIDS, knowledge about health services, interpersonal communication regarding HIV/AIDS, and social norms. Data on different measures of condom use showed positive effects in the majority of studies, although evidence regarding other behaviour change (eg. reduced age of sexual behaviour, number of partners, abstinence) varied but leaned towards having no effect. The review authors concluded that “Campaigns that include television require the highest threshold of evidence, yet they also yield the strongest evidence of effects”.⁴⁶ The findings have limited relevance for the UK and OECD countries.

In their review of mass media interventions targeting young people smoking, Richardson *et al.* reported evidence from a single study on mass media channels, one that examined the effects on youths of anti-smoking cinema adverts played during a film.⁴⁴ Effects included increased disapproval of smoking in films, and amongst smokers, a desire to quit. In a wide-ranging review of mixed health behaviours, Mozaffarian *et al.* noted that mass media and education campaigns using “multiple modes” (described as including “print, radio, Internet, television, social networking, other promotional materials”) demonstrated effectiveness for increased consumption of specific healthy foods, reduced consumption of less healthful foods and drinks, and the promotion physical activity.⁶⁸

In a review which aimed to synthesise evidence evaluating the effectiveness of mass media interventions on helping people to quit smoking/tobacco use and/or to prevent relapse, Jepson *et al.* presented data in a format that organised the results by channel of mass media.⁴³ Interventions which drew on two or more forms of the media (such as newspaper,

TV and billboard advertising) were referred to as 'multi-channel' mass media. A particular emphasis was placed on evaluating relevance to the UK setting. Interventions were examined in terms of both the effectiveness of the channel of communication and also for the effectiveness of message content (see also section on 'Intervention Content' below). The review noted that many of the studies used multiple types of media combined with other interventions, which made it difficult to evaluate which particular component was effective or ineffective. It reported some good quality evidence that the use of technology such as mobile phones could be effective, and offered the potential to deliver culturally specific materials to targeted groups. It also reported evidence that internet could be an effective way of delivering interventions, and may be a particularly appealing channel of communication for young people. Three studies, probably relevant to the UK, found an effect of multi-channel mass media on smoking cessation, but there was no evidence about which of the mass media components of the interventions were most effective (or most ineffective, and the review authors cautioned that the results of these studies should be interpreted with caution due to their poor methodological quality.

One review examined interactivity as a potential moderator of effectiveness. In Swanton *et al.*'s meta-analysis of the effects of new media interventions on sexual health behaviours, the interventions examined included websites, SMS messages, social media and online video.⁵³ Components of interventions were coded as interactive (e.g. personalised emails) or static (e.g. watching an online video). Moderation analyses found a variation in the effect of new-media interventions on condom use depending on the interactivity of the new-media channel used. "Interventions using **interactive components** yielded significant effects (OR=1.79, 95% CI 1.15 to 2.77, p=0.01); however, this effect was significantly heterogeneous, $Q(6) = 28.03$, $p < 0.01$, $I^2 = 78.59\%$, suggesting that further factors may influence the size of the effect. Interventions using **static content** did not yield significant effects, and the effect size was homogeneous" (p.15).⁵³ In conclusion the review found that interventions which used interactive components were shown to be more effective than static components in improving condom use

Intervention duration and intensity/exposure: Findings from review of reviews

Table 14 summarises the number of included reviews of mass media campaigns which examined intervention duration or intensity/exposure.

Table 14: Reviews which examined intervention duration or intensity/exposure

No. of reviews with statistical analysis of effect of intervention duration	2: LaCroix (2014) ⁵¹ , Swanton (2015) ⁵³
No. of reviews with description of an association of effect of intervention duration	4: Bala (2013) ²⁷ , Brinn (2010) ³⁵ , Mozaffarian (2012) ⁶⁸ , Richardson (2008) ⁴⁴
No. of reviews with no focus on intervention duration or intensity/exposure	30

Six of the thirty-six reviews examined or commented on the relationship between intervention duration or intensity/exposure and effectiveness. Information on duration or intensity/exposure in individual studies was extracted in other reviews, but no attempt was made in the review analysis or synthesis to draw conclusions about relative effectiveness of different levels of duration or intensity/exposure.

Two of the reviews, both examining sexual health campaigns, conducted statistical analysis to examine whether intervention effectiveness was moderated by intervention duration.^{51,53} Both found some evidence that effectiveness increases with greater duration and intensity/exposure, although for only some of the outcomes examined. In the meta-analysis of the effects of new media interventions on sexual health behaviours by Swanton *et al.*,⁵³ the interventions examined included websites, SMS messages, social media and online video. They were coded into three duration categories – a single session, ≤6 months, or > 6 months in duration – and the relationship between duration and effectiveness was examined in moderator analysis. Intervention duration was not related to effectiveness in interventions targeting condom use, but was related to effectiveness when the outcome was participation in testing for sexually transmitted infections (STIs): single session interventions were less effective than longer interventions (up to and over 6 months in duration, OR=1.64, 95% CI 1.36 to 1.98, p<0.01; OR=2.17, 95% CI 1.36 to 3.47, p<0.01, respectively). A meta-analysis of the impact of sexual health mass media interventions on

condom use and HIV-related knowledge,⁵¹ examined whether effectiveness was moderated by various intervention characteristics, including duration and proportion of target population exposed to the campaign. The relationship between campaign characteristics and magnitude of effects was examined using a modified weighted least squares regression analysis. Greater increases in condom use occurred following longer campaigns ($k=51$, $\beta=0.48$, $p<0.001$).

Three reviews (one NICE Rapid Review and two Cochrane reviews) provide some evidence to suggest that intervention duration and intensity/exposure are associated with effectiveness in mass media campaigns targeting tobacco use, but do not examine the relationship statistically.^{27,35,44} A NICE Rapid Review of the effectiveness of mass media interventions designed to prevent the uptake of smoking in children and young people examined whether the intensity of interventions influenced effectiveness or duration of effect.⁴⁴ Evidence Statements in the review stated that “The duration of a mass media intervention influences its effect. Increased exposure to anti-tobacco messages over time decreases intent to smoke and smoking initiation, meanwhile increasing negative attitudes towards the tobacco industry”. Underpinning support for the Evidence Statement came from a Cochrane review (Sowden 1998 as cited by Richardson *et al.*)⁴⁴ suggesting that intervention duration was an important influence on behaviours and from three cross-sectional studies, all conducted in the USA, which found that increased exposure to anti-smoking ads over time resulted in a decrease in young people smoking in the past 30 days (compared to those in markets with no exposure to state-sponsored anti-tobacco laws), intent to smoke, initiation of smoking, enhanced perception of risk, and negative attitudes about smoking. The same NICE Rapid Review also examined facilitators and barriers to implementation, and noted that lack of exposure and longevity are barriers to effective mass media interventions, noting that “messages must appear frequently enough for audiences to notice them and internalise them” and that one-off campaigns are not likely to induce behaviour change.⁴⁴

Bala *et al.* examined the effectiveness of mass media interventions for smoking cessation in adults in a Cochrane Review.²⁷ From reviewing eleven campaigns, the review concluded that the intensity and duration of campaigns may influence effectiveness, but length of

follow-up and concurrent secular trends and events could make it difficult to quantify. The review cited a UK study (McVey 2000 as cited by Bala *et al.*),²⁷ which compared the impact of single- and double-weight TV campaigns on quit rates and found no significant differences at six months, with the single-weight region (Granada) at 6.3% and double-weight (Tyne Tees, Yorkshire) at 6.6%, yielding an adjusted OR of 1.02 (P = 0.94). It also discussed studies in other countries which appeared to support having longer-running or more intense campaigns, but noted that effects may have been confounded by the concurrent presence of other intervention elements such as face-to-face counselling. The authors concluded that “The duration and intensity of an intervention may affect its impact on smoking behaviour, but evaluations need to last long enough to detect lasting changes, and to allow for confounders and for secular trends” (p.14).²⁷

Another Cochrane Review examined the effectiveness of mass media intervention for preventing smoking in young people, with seven studies, all using a controlled design, meeting all of the inclusion criteria.³⁵ The three effective campaigns were all “of reasonable intensity over extensive periods of time” (p.1), compared with the campaigns which did not report positive findings, which were much more heterogeneous in duration and generally shorter. The three effective campaigns comprised: 190 TV, 350 cable TV and 350 radio spots purchased in each of the four years during which the campaign was running (Flynn 1995 as cited by Brinn *et al.*);³⁵ 167 TV and cinema spots in three annual campaigns (Hafstad 1997 as cited by Brinn *et al.*);³⁵ and television (local, cable, and network), radio, web sites, magazines, movie theatres and several other media used over six and a half years in the National Youth Anti-Drug Media Campaign (Longshore 2006 as cited by Brinn *et al.*).³⁵

Finally, a wide-ranging mixed topics review examining the effectiveness of a range of population approaches reported “strong evidence” that sustained, ie. longer duration, campaigns were important, particularly for reducing smoking.⁶⁸ The review also noted that some of the campaigns found to be effective in improving diet knowledge and behaviours were implemented for many years, suggesting that “behavioural changes are sustainable when media and educational campaigns are continued”. However, the effects of mass media campaigns were not distinguished from campaigns using multiple approaches including mass media, and the review conducted no statistical analysis to of the moderating

role of campaign duration. It recommended that media and education campaigns to improve diet, physical activity and smoking should be sustained and should use multiple modes/channels.

Intervention content: Findings from review of reviews

Table 15 summarises the reviews which assess the impact of message type, targeting and source.

Table 15: Reviews which examined message, targeting and source

No. of reviews with message as primary focus of the review	0
No of reviews with targeting of specific groups as primary focus of the review	3: de Kleijn (2015, girls) ³⁸ , Gould (2013, indigenous populations) ³⁹ , Guillaumier (2012, disadvantaged groups) ⁴⁰
No. of reviews analysing the effect of message	12: Abioye (2013) ⁵⁵ , Brinn (2010) ³⁵ , Brown (2014b) ³⁶ , Byrne (2005) ⁶⁵ , Derzon (2002) ⁶⁶ , French (2014) ⁴⁸ , Hill (2014) ⁴² , Jepson (2006) ⁴³ , LaCroix (2014) ⁵¹ , Mozaffarian (2012) ⁶⁸ , Richardson (2008) ⁴⁴ , Wilson (2012) ⁴⁵
No of reviews analysing the effect of targeting specific groups	7: Brinn (2010) ³⁵ , Brown (2014b) ³⁶ , Byrne (2005) ⁶⁵ , Derzon (2002) ⁶⁶ , Jepson (2006) ⁴³ , Richardson (2008) ⁴⁴ , Wilson (2012) ⁴⁵
No. of reviews analysing effect of the “source” of the message	2: Byrne (2005) ⁶⁵ , Richardson (2008) ⁴⁴
No. of reviews with no specific analysis of message or targeting of specific groups *Had intentions to look at targeting or messaging but not enough studies.	20
Types of message: Social norms, guided by theoretical concepts, personal testimony, highly emotive, graphic, negative health consequences, fear campaigns, strategies for refusal	
Nature of targeting: Low education, low SES, age, youths, girls, cultural indigenous, ethnic groups	

Whilst the majority of reviews provide some detail on the content of mass media interventions, often including some detail about the message and target population for

individual studies and campaigns, only 12 provided some degree of analysis or synthesis of the influence of message type on behavioural or other outcomes. A further 10 provided analysis or synthesis of the effectiveness of targeting of campaigns. Three reviews' main focus was the effectiveness of targeting campaigns toward specific groups; girls, indigenous populations and disadvantaged groups, whilst none focussed solely on the characteristics of effective messages. There is a clear overlap between reviews that provide information on effect of message type and effect of targeting, which is reflected in the summary below.

Message types

A number of reviews provide evidence that intervention content influences effectiveness. An evidence statement in the NICE review on preventing uptake of smoking by children states "the way in which an intervention is delivered does influence effectiveness. However effectiveness is dependent on a number of factors including message content, mode of delivery, target audience, message framing and message elements" (p. 35).⁴⁴

There were some consistent themes among those reviews which compared message types. Several reviews found that campaign messages intended to de-normalise behaviour, including social norm campaigns, may be more effective across a range of behaviours, including physical activity in adults, smoking in adults and substance use in the young respectively, than some other message types.^{44,55,65,66} In their review about health campaigns to increase physical activity, Aboiye *et al.* noted that campaigns based on 'social norm' messages were more likely to lead to reduction in sedentary behaviour (RR=1.33, 95% CI: 1.01 to 1.43) compared with those using celebrities or based on a 'risk message' (RR=1.05, 95% CI: 0.92 to 1.21).⁵⁵ Richardson *et al.* provided evidence from one qualitative study that social norms messages were more effective than fear messages at encouraging more committed young smokers to consider their smoking behaviours and reinforcing awareness of the dangers of smoking in less committed smokers.⁴⁴ The review by Byrne *et al.* examining various substance use behaviours in young people found that a de-normalization message was used in 13 campaigns, and most of these (89%) were associated with positive outcomes in the three domains of attitudes, knowledge and behaviour.⁶⁵ A meta-analysis on a similar theme by Derzon *et al.* did not report any particularly large effects for their category 'perceived normative use' but did note that positive attitudes to

non-use, which would arise from de-normalization messaging, were associated with positive outcomes regarding behaviour, attitudes, and knowledge.⁶⁶

Several reviews highlighted that messages concerning negative health consequences, mostly anti-tobacco messages, can be effective; however, for the most part negative messages were not directly compared to positive messages.^{43-45,65,68} In a broad ranging review of mixed health behaviours, Mozaffarian *et al.* noted that factors that increase effectiveness for tobacco campaigns include use of strong negative messages about health.⁶⁸ A review by Byrne *et al.* of campaigns for various substance use behaviours in young people found that 14 campaigns, representing 56% of the total number of campaigns evaluated, employed health effects messages using information about the negative health effects of substance use in order to effect change in attitudes, knowledge, behaviour, or all of these, and 79% were associated with positive outcomes.⁶⁵

In a review of mass media campaigns for anti-smoking messages, Wilson *et al.* found that message content and tone contributed to heterogeneity in effects, and suggested that, though it is not clear which types work best, adult audiences are most likely to respond to graphic depictions of health consequences of smoking; this evidence primarily based on the effectiveness of hard hitting graphic campaigns from Australia.⁴⁵ In the NICE rapid review of campaigns to prevent uptake of smoking by children, Richardson *et al.* reported evidence from one RCT suggesting that tobacco related disease messages were effective for increasing anti-tobacco attitudes in the young and another RCT that message content could change perceptions of health risk severity and intentions not to smoke; both studies were from the US and the review concludes that it is not clear if these findings are directly applicable to the UK.⁴⁴ In a review of mass media campaigns to encourage smokers to quit, Jepson *et al.* found little direct comparison between message types but this review resulted in the following evidence statements: there is level 2- evidence, which is probably relevant to the UK population, which suggests that advertisements depicting suffering as a result of tobacco use may be instrumental in promoting cessation or reinforcing the decision to quit; there is level 3 evidence that shows that graphic mass media messages about negative consequences of smoking among adults also has a positive effect on quit attempts among young people.⁴³ Finally, there is level 2- evidence providing insufficient evidence that longer

positive messages are less effective than short negative messages. This review concluded however that although a few studies have evaluated different message styles (e.g. fear arousing), there was not enough evidence to determine which messages were more effective than others. They point out that smokers and reasons for smoking are complex and smokers are not simply compelled to quit because of fear/negative messages.⁴³ One aspect of note here is the addictive impact of nicotine on attempts to quit smoking; although this is rarely mentioned in the context of messaging.

Reviews highlight some messages which appear to be less effective or for which the evidence is less convincing. Both Byrne *et al.* and Derzon *et al.* found that those campaigns emphasising resistance or refusal skills for substance use behaviours in the young were less effective.^{65,66} Byrne *et al.* noted that one campaign promoting such skills was associated with an increase in the intention to take up smoking amongst young people, though this campaign was funded by a tobacco company and did not contain messages about the harmful effects of smoking.⁶⁵ In a similar vein, Derzon *et al.*'s review showed gain in terms of knowledge with this message but not in terms of behaviour and attitudes.⁶⁶

The effectiveness of tobacco industry deception or truth campaigns for the young was discussed in several reviews with some mixed evidence between studies.^{44,45} Richardson *et al.* reported evidence from several US cross-sectional study that 'truth' messages were effective in decreasing and preventing smoking in youth, though they point out that the American Legacy Foundation's Truth campaign is a specific US campaign and results may not be directly relevant to other contexts including the UK.⁴⁴ They also report an RCT study which found anti-industry ads did not decrease young people's intention to smoke, and a qualitative study which found that "Industry manipulation advertisements" were aesthetically appealing but ineffective for preventing the uptake of smoking. Wilson *et al.*, in their review of interventions for smoking, reported that among US youths, large-scale campaigns focused on tobacco industry manipulation and deception were shown to be effective at reducing initiation.⁴⁵

Target audience

A dominating theme from a number of reviews is that message effectiveness depends on the target audience and appropriateness of the message to the target audience.^{35,43-45,48,51,65,68} The review by Mozaffarian *et al.* which examined population approaches across multiple behaviours (diet, physical activity and smoking) noted that “Broad community-based media and educational programs that target multiple cardiovascular risk factors and behaviours simultaneously have been less successful, which suggests the importance of focused messages for the target audience” (p.1521).⁶⁸ Byrne *et al.* having looked at campaigns across a mixture of behaviours, indicates that mass media messages need to take into account age, gender, culture, level of engagement in the target activity, and personal characteristics such as sensation seeking, of the intended audience.⁶⁵ Whilst these reviews considered multiple behaviours, even reviews which have considered only one lifestyle behaviour have suggested that no one message seems to be more or less effective across the board, and reason that we should not expect one style of message to resonate with all.^{43,44} The reviews covering smoking alone suggest that smokers are complex and the reasons for smoking are complex, and the outcomes of any message type depends on the context and the values that the audience associates with smoking.^{43,44} Broadly, the message needs to have relevance for the target audience and to have the right content, format, tone, and level of complexity for the audience; any imagery needs to complement the campaign message.⁴⁸

Several reviews examine whether and how campaigns should be targeted to reach specific subgroups, for example, youths, disadvantaged or less educated populations, Indigenous populations, and other ethnic groups. There is evidence for effective campaigns targeted to these groups.^{35,39,40,43} In the review by Brinn *et al.* of mass media interventions to prevent smoking in young people, two of the three studies successfully reducing smoking behaviour targeted specific populations; one targeted girls and one targeted higher-risk groups, defined by parental education attainment and income levels.³⁵ Guillaumier *et al.* reported that anti-smoking campaigns developed for, marketed to, and evaluated with disadvantaged groups only were successful in achieving recall and response.⁴⁰ Jepson *et al.* found a lack of evidence for effectiveness on smoking outcomes of campaigns targeted at smoking pregnant women and women of young children.⁴³ However, they report that developing

culturally appropriate advertising materials, which target particular ethnicities or communities, have been showed to be effective by a number of studies, including targeting rural Nebraskan oral tobacco users with cowboy images, using gospel, jazz music and images appropriate to African American communities, or targeting the community with own language materials as in the case of Vietnamese Americans. However, they note that ethnicity is also crosscut by different income and educational levels and there is a need to be sensitive to the pitfalls of developing campaigns that may simply reproduce social or cultural stereotypes. It is important that the message does not stereotype nor patronise; targeted campaigns need to be culturally appropriate and relevant.³⁹

Few reviews provide examples for how to target the message for specific populations. A review by Brown *et al.* considered the equity impact of interventions to reduce smoking in adults; it found mixed evidence in terms of equity of campaigns overall, but provided evidence from studies respectively showing that highly emotive and personal testimony advertisements were more effective with low SES groups, and emotive or graphic advertisements were more effective with low SES smokers.³⁷ Hill *et al.* found weak evidence that anti-smoking television advertisements using personal testimony are more likely to have neutral equity impact for socioeconomic inequalities compared with traditional information based advertisements which tended to have greater impact among high SES smokers.⁴² Gould *et al.* point out that for New Zealand Maori, mainstream graphic advertisements showing body parts, are inappropriate.³⁹

Nevertheless, generic campaigns aimed at the general population can also be effective in reaching specific subgroups such as the young, disadvantaged smokers or Indigenous populations.^{39,40,44} Adult-focussed or general population campaigns are successful for reducing smoking in young people.⁴⁴ Looking across different types of substance misuse, Derzon *et al.* suggests that bigger effects are obtained by targeting parents and other youth-influential adults than the youths themselves.⁶⁶ Whilst some studies suggested that targeted campaigns are preferred by indigenous populations, even in these subgroups, generic campaigns were as effective in terms of recall as more targeted campaigns, though it was less clear whether recall translated into behaviour change.³⁹ Guillaumier *et al.* noted that when general population and targeted campaigns, both airing nationally, were compared in

disadvantaged only samples, disadvantaged smokers were more likely to recall and respond to the generic campaigns than the targeted campaigns, suggesting that general population campaigns have the potential to be effective with disadvantaged population subgroups.⁴⁰

Source

There is some indication that the source of the mass media message can also be important, however this issue is addressed in only a small number of reviews. Furthermore the source of the message is often reflected in the message type and its effect can therefore not be easily disentangled. Similarity between the source and the audience may increase persuasive impact, for example teenage actors for campaigns aiming at young people.⁶⁵ Several reviews conclude that campaigns produced by the tobacco industry are not effective and may even be harmful, perhaps because the messages used hold less negative emotional appeal to the young than campaigns organised by tobacco control programs.^{44,45} In an evidence statement, Richardson *et al.* conclude that comparing intervention source, prevention campaigns produced by the tobacco industry are less effective than anti-tobacco campaigns produced by tobacco control bodies.⁴⁴ Youth perceive industry campaigns to be less effective, less interesting, and less engaging.

Intervention scale: Findings from review of reviews

None of the reviews examined scale of campaign as a potential mediator of effectiveness. Although the reviews noted whether their included studies were implemented at local, regional or national levels, most simply listed the information and none of them provided any evidence or commentary regarding the relative effectiveness of campaigns implemented at these different levels, or discussed factors which might be associated with effectiveness when campaigns are implemented at the different levels.

Methods: Review of recent UK primary studies

In the UK some primary studies have recently sought to assess the contribution of different media campaign characteristics to campaign effectiveness. In order to address the gaps in the review of reviews and to examine evidence with relevance to the current UK context, we conducted an additional review of UK primary studies published between January 2011 and September 2016 (Review D). The focus of this latter review was on evidence concerning the characteristics of UK mass media campaigns associated with effectiveness, rather than on the effectiveness of those campaigns per se.

Identification of studies

Studies were eligible if the paper was published in or after 2011 and the study was conducted in the UK. Multi-country studies were eligible if findings for the UK were reported separately. The campaigns had to address one of our six health topics: alcohol use, illicit substance use, diet, physical activity, sexual and reproductive health, and smoking cessation and prevention. Apart from targeted health topics, the same study eligibility criteria for primary research studies evaluating the effectiveness of mass media interventions were used, as those used in the related review of mass media campaigns to reduce alcohol consumption.¹⁷ Box 3 describes the mass media campaign intervention study eligibility criteria. Studies could report data or outcomes of any format for the following outcomes: behavioural or social cognitive outcomes; or media outcomes (e.g. recall of, understanding of, onward transmission of the campaign); or distal (e.g. societal or policy changes) or process outcomes (e.g. cost effectiveness). Studies of multi-component interventions were eligible if they assessed the specific effects of a mass media component, and published conference abstracts were eligible provided there was a description of the campaign and outcome data were reported.

Eligible:

A mass media campaign broadcast using: television, radio, cinema, online broadcasting, newspapers and magazines, leaflets/booklets, direct mail, outdoor advertising, text messaging, email and digital media, including websites and banner ads.

Ineligible:

- a) interventions involving person-to-person contact, requiring active engagement before receipt of the message (e.g. alcohol screening questions) rather than passive message exposure, or online treatment or self-help programmes.
- b) studies in which a baseline measure is used to tailor a subsequent mass media message.
- c) studies testing campaign messages, rather than assessing implemented campaigns intended to reach large numbers of people. Exclude studies of messages taken from an implemented campaign but delivered and evaluated outside of that campaign e.g. in laboratory conditions.
- d) studies of multi-component interventions if they do not assess the specific effects of a mass media component.
- e) studies assessing the impact of advertisement bans.
- f) studies of social norms campaigns unless it is evident from the information available that a mass media channel was used. If an intervention is described only as a social norms or social marketing campaign and there is no information indicating the use of mass media channels then it will be ineligible for inclusion.
- g) studies of obligatory health warnings (e.g. on pack health warnings; point-of-sale health warnings); evaluating policies rather campaigns.

Box 3: Mass media interventions (Review D)

The search strategy was a revision of that used for the project's review of mass media campaigns to reduce alcohol consumption, combining terms for mass media and health communication campaigns and for the target health topics, with a UK studies search filter (see Appendix 6 for an example strategy). Sixteen academic databases were searched on 7th-9th September 2016 and results were uploaded to an EPPI-Reviewer 4 database and de-duplicated (see Figure 4)²⁶:

- ASSIA
- EMBASE
- Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
- Social Sciences Citation Index (SSCI) --1900-present; Arts & Humanities Citation Index (A&HCI) --1975-present; Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) --1990-present; Book Citation Index– Social

Sciences & Humanities (BKCI-SSH) --2005-present; Emerging Sources Citation Index (ESCI) --2015-present

- PubMed, via EPPI-Reviewer 4 PubMed direct import
- EBSCOhost Research Databases Database - Communication Source; Business Source Complete; ERIC
- Cochrane Library: Cochrane Central Register of Controlled Trials : Issue 8 of 12, August 2016, NHS Economic Evaluation Database, Health Technology Assessment Database : Issue 3 of 4, July 2016, Cochrane Methodology Register : Issue 3 of 4, July 2012

Records (n=10,520) were screened for initial topic relevance, date and country by two reviewers (KH, KA). One percent (n=105) of randomly selected records were double-coded to pilot the screening process and check for inter-rater reliability. Once agreement was over 90% on included and excluded categories, then a proportion of the rest were allocated to each reviewer for single coding. The resulting 240 were retrieved as full-texts and all double-coded by the reviewers (KH, KA) for inclusion; any final decision disagreements were resolved by a third reviewer (LB, MS). Twenty-seven papers, covering 25 recent evaluations of UK mass media campaigns were included for analysis (see Appendix 7).^{119,120,134-158} A list of UK primary studies excluded by full text assessment is appended (Appendix 8).

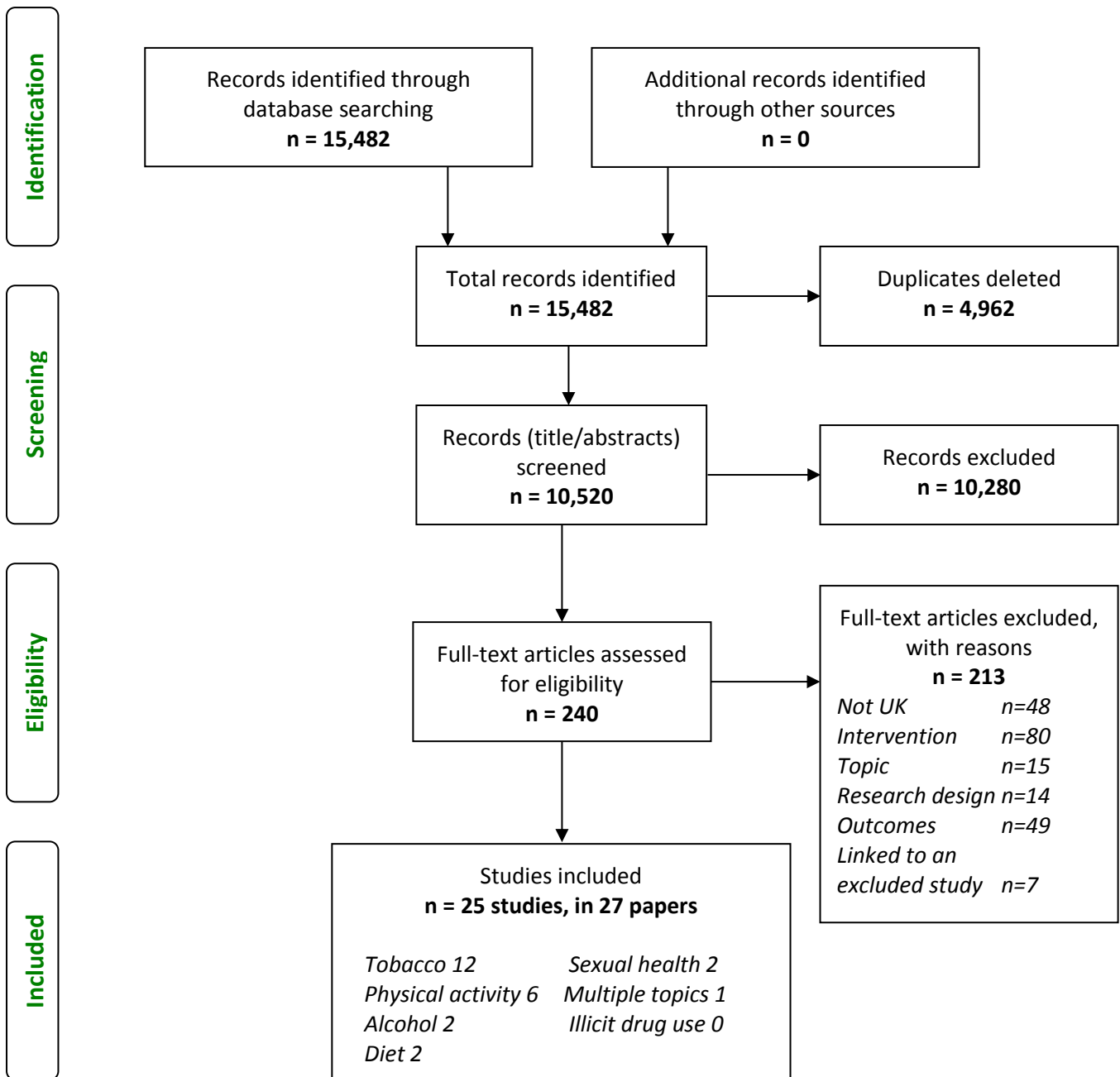


Figure 4: PRISMA diagram of identification and selection of primary studies (Review D)

The data extraction form was a revision of that used for the project’s review of reviews and designed to capture the study methods and outcome data as well as details of the mass media campaigns (the intervention) towards answering the project’s objectives. Studies were double data extracted independently by three reviewers (KA, KH, JM), who held telephone meetings in pairs to agree and finalise the data for each study. A pilot data

extraction exercise, using two studies independently coded by all three reviewers, familiarised them with the process to ensure consistent interpretation of the headings. No study authors were contacted for obtaining or confirming data.

In a departure from the review project's protocol, two additional risk of bias appraisal tools were added after study selection to correspond to the included studies' design. The proposed EPHPP (Effective Public Health Practice Project) Quality Assessment Tool for Quantitative Studies tool was used to assess experimental studies,¹⁰² with the additional US National Institutes of Health's assessment tool for observational cohort and cross-sectional Studies,¹⁵⁹ and CASP (Critical Appraisal Skills Programme) tool for qualitative studies.¹⁶⁰ Studies were appraised for quality and relevance (at a study level) independently in duplicate by three reviewers (KA, KH, JM), who held telephone meetings in pairs to agree and finalise the risk of bias assessment for each study. The pilot exercise described above, also included an independent appraisal of quality and relevance for the same two studies by all three reviewers.

This review of recent UK primary studies was designed to capture data or outcomes of any format for the following outcomes: behavioural, social cognitive or media outcomes; distal (e.g. societal or policy changes); or process outcomes (e.g. cost effectiveness). Thus from its inclusive nature, we did not expect to be able to carry out a meta-analysis of the data.

Narrative synthesis

Evidence from the UK primary studies was reviewed and synthesised around the following characteristics of mass media campaigns: Theoretical frameworks, intervention duration and intensity, mass media channels used, and intervention content (messages, targeting and source) and intervention scale. How these characteristics were defined and analysed is described above in the section 'Methods: Systematic review of reviews'.

Results: Review of recent UK primary studies

Use of theory: Findings from review of UK primary studies

Table 16 summarises the number of included UK primary studies which examined various aspects of theory, and the various behaviour change theories mentioned in the studies.

Table 16: UK primary studies which included theory

No. of studies with theory or as integral to study and programme design	6: Brown (2014c) ¹²⁰ , Brown (2016) ¹³⁶ , Eves (2012a) ¹³⁹ , Eves (2012b) ¹⁴⁰ , Richardson (2014a) ¹⁵² , Richardson (2014b) ¹⁵³
No. of studies with behaviour change theories	2: Brown (2016) ¹³⁶ , Eves (2012a) ¹³⁹
Behaviour change theories listed: Theory of Planned Behaviour, Prime Theory	
No. of studies with communication theories	1: Brown (2014c) ¹²⁰
Communication theories listed: Social Contagion Theory	
No. of studies with no focus on grand theory	19

Out of twenty-three primary studies, seventeen did not include grand theories, conceptual frameworks or models to inform their mass media interventions. Of the six studies that did incorporate theory, three grand theories were identified: ‘Social Contagion Theory’ to amplify a campaign by normalising a behaviour and turning it into a movement;^{120,136} ‘Prime Theory’ (plans, responses, impulses/inhibitory forces, motives and evaluations) to alter people’s desires to succeed in changing maintaining patterns of behaviour through increasing motivational inputs,^{120,136,152,153} and ‘Theory of Planned Behaviour’ to alter behaviour through influencing people’s intentions to perform such behaviours.^{139,140} One further study mentioned using theoretical ideas rather than identifying a specific grand theory, by drawing upon ideas from social marketing and behaviour change, but in this study it was unclear how they used these ideas.¹³⁸ Across the studies, there was no mention of using other theoretical frameworks or logic models to inform their research questions or to identify the outcomes relating to their research.

In terms of how theory was used in the basis of the programme design, in Brown *et al.*'s study they used Social Contagion Theory to piggyback onto an annual 'No Smoking Day' that aimed to help smokers stop by providing a nationally supportive environment and drawing attention to available treatments, they also developed a national cessation campaign (Stoptober) to generate a burst of activity around key time points when quit rates had reduced.¹²⁰ In a later study Brown *et al.* used 'Prime Theory' to refine film content on the basis of focus-group testing with a diverse group of smokers.¹³⁶ Using 'Theory of Planned Behaviour' to alter behaviour through influencing people's intentions, Eves *et al.* tested the success of two different messages in encouraging more physical activity in members of the public.¹³⁹

Mass media channels used and interactivity: Findings from review of UK primary studies

Table 17 summarises the different mass media channels examined in the review of UK primary studies.

Table 17: UK primary studies which examined media channels and interactivity

No of UK studies which compared effectiveness of different media channels within the same study	1: Jawad (2015) ¹⁴³
No. of studies with no focus on media channels and interactivity	24

As can be seen, only one of the studies compared different media channels within the same study.¹⁴³ This was a tobacco control social media campaign which aimed to raise awareness about the health risks of waterpipe tobacco smoking. The number of Facebook subscribers, Twitter followers and YouTube views all increased over time (measures taken at 3, 6 and 9 months). In a descriptive comparison of interactions with the social media channels, the authors concluded that Twitter provided the most organisation-based contact (e.g. 8% of tweets were retweeted, and nearly two-thirds were on health effects of waterpipe tobacco and other Twitter users interacted with @shishaware 70 times), while Facebook was the most interactive channel (e.g. 69% status updates had more than one "like"; 23% had more than on comment from users). The YouTube channel had also been "favourited", had "likes" and "dislikes", and had a rate of 112.2 comments per 10,000 views.

The remainder of the UK primary studies reported the channel(s) used in the campaigns, but did not provide evidence comparing or commenting on the effectiveness of different channels.

Intervention duration and intensity/exposure: Findings from review of UK primary studies

Table 18 summarises the number of UK primary studies which examined intervention duration or intensity/exposure.

Table 18: UK primary studies which examined intervention duration or intensity/exposure

No. of studies which compared effects of level of intervention duration or intensity/exposure on smoking outcomes Exposure data used the standard advertising industry measures of a campaign’s reach (Gross Ratings Points, GRPs) and its reach and frequency (Television Ratings, TVRs)	6: Langley (2012) ¹⁴⁴ , Richardson (2014a) ¹⁵² , Richardson (2014b) ¹⁵³ , Sims (2014), Lewis (2015) ¹⁴⁸ , Sims (2016) ¹⁵⁴
No. of studies which compared effects of level of intensity/exposure, alongside message types/content, on stair use for increasing physical activity	3: Eves (2012b) ¹⁴⁰ , Lewis (2011) ¹⁴⁵ , Lewis (2012a) ¹⁴⁷
No. of studies which compared effects of sexual health campaign Exposure calculated by comparing 3 levels of campaign recall and recognition	1: Flowers (2013) ¹⁴¹
No. of studies which compared effects of level of intervention duration to improve diets	1: Capacci (2011) ¹³⁷
No. of studies with no focus on intervention duration or intensity/exposure	14

Eleven of the 25 recent UK primary studies commented on or examined the relationship between mass media intervention duration or intensity/exposure and effectiveness.

A series of six related statistical studies evaluated televised tobacco control campaigns broadcast in England (2002-10) by examining existing data sources and indicators of smoking behaviour against detailed population-level campaign exposure data.^{144,148,152-155}

Exposure data used the standard advertising industry measures of a campaign’s reach (Gross Ratings Points, GRPs) and its reach and frequency (Television Ratings, TVRs). The

standard advertising industry measures of GRPs are equivalent to the summed ratings of individual advertisements across multiple campaigns, giving a per capita measure of advertising exposure. TVRs are defined as the percentage of a particular audience that has seen a commercial break.

An analysis using 4 years of longitudinal panel data from the International Tobacco Control UK Survey found that increased exposure (as measured by GRPs) was associated with higher recall at 6 months, although participants were recalling any advertising or information that talked about the dangers of smoking, or encouraged quitting on television – not specifically tobacco control campaigns.¹⁵³ The effect was only significant for recent exposure (OR=1.51, 95% CI: 1.14–2.01); exposure in the 4-6 months before the survey had no impact on recall.

An analysis of monthly Opinions and Lifestyle Survey data found a small association between increased exposure (by 400 GRPs) to television adverts, equivalent to all adults in the population seeing four tobacco control television adverts per month, was associated with 3% lower odds of smoking (OR=0.97 95% CI = 0.95, 0.999, p=0.044) a couple of months later, and a 1.80% (95% CI = 0.47, 3.11, p<0.01) decline in average daily cigarette consumption one month later.¹⁵⁵ Further analyses of exposure by emotive characteristics of the messages in the adverts are reported in the section on ‘Intervention content’ below.¹⁵⁴

In an analysis of time series data of quitline calls and NRT over-the-counter sales and prescribing data against exposure to anti-tobacco mass media advertising and smoking cessation medication advertising,¹⁴⁴ there was some evidence, that effects on those information and treatment seeking behaviours tended to peak in periods of greater campaign exposure (TVRs were higher in January and were highest in January 2005 and 2010). This suggests that exposure is associated with effectiveness. More specifically, a 1% increase in tobacco control TVRs led to a 0.129% increase in quitline calls in the same month (or an 0.085% increase in the seasonally adjusted model, p=0.007); for NRT, in most years there was a clear peak in prescribing in the first 3 months of the year and a much smaller peak in October; and in January to March each year there were generally peaks in over-the-counter NRT sales, and a 1% increase in pharmaceutical company TVRs led to a 0.05% increase sales in the same month, however it was not statistically significant in the adjusted

model. A further study evaluated the impact of different types of message in national campaigns on calls to the English NHS Stop Smoking telephone helpline.¹⁵² Exposure to all types of campaign (as measured by GRPs) was associated with increased calls to helpline. (See the section on 'Intervention content' below for findings for message types.)

Looking at the campaign impact on smokefree homes, Lewis *et al.* found that level of exposure to all tobacco control campaigns (measured by GRPs) was not associated with increased likelihood that a home would be smokefree, but level of exposure to second-hand smoking campaigns was associated with increased likelihood that a home would be smokefree, with increased exposure being associated with increased odds (by 7% for each addition 100 GRPs) at a one-month lag after the campaigns (OR: 1.07, 95 % CI: 1.01–1.13, $p=0.033$).¹⁴⁸ There was no significant association during the same month (OR: 0.99, 95%CI: 0.93-1.05, $p=0.740$) or the campaign or two months after (OR: 0.98, 95%CI: 0.92–1.04, $p=0.490$), suggesting that the impact of the second-hand smoking campaign did not occur immediately and also fades quickly.

A series of naturalistic studies evaluating local point of choice prompts in public places (e.g. multi-storey workplaces and railway stations) to encourage stair use for increasing physical activity varied the number of posters and signage shown throughout the experimental period.^{140,145,147} This variation in intensity of exposure was tested alongside variations in message types, thus the findings are reported below in the 'Intervention content' section.

One study evaluated a regional ten-month sexual health poster, leaflet and online campaign (2009-10) in the west of Scotland aimed at men who have sex with men.¹⁴¹ Survey results were analysed by amount of respondents' exposure to the campaign (their recall and recognition of the campaign). At the end of the campaign, greater exposure was associated with positive changes for some but not all outcomes. For example, those with no exposure were significantly less likely to report always using appropriate lubricant than those with low exposure (AOR = 0.42, 95% CI = 0.23 to 0.77, $p=0.005$), however, those with high exposure to the campaign did not differ significantly from those with low exposure.

Finally, one study evaluating a 2003-2006 national mass media campaign to improve diets, reported behavioural outcomes annually throughout the radio, TV and online campaign.¹³⁷ The campaign to encourage consumption of five portions of fruit and vegetables per day used “mini campaign relaunches” every 6 months; although the overall aim was the same, each relaunch targeted a different sub-population (by income, age or gender) and used slightly different methods and channels. Significant campaign effects for increased fruit and vegetable intake did not occur until the third year of the campaign and the effect was stronger for those in lower income groups. The fact that significant impacts did not emerge until the third year of the campaign may suggest that campaigns need to last a certain length of time before effects are felt, although the authors suggest that the delay in impact may have been partly due to the nature of the activities in different phases of the campaign, with earlier phases involving a lower investment in targeted advertising.

Intervention content: Findings from the UK primary studies

Table 19 summarises the UK primary studies which assess the impact of message content.

Table 19: UK primary studies which compare effects of different message types, content, target or source

Number of studies which compare effects of different types of message or campaign content	9: Eves (2012b) ¹⁴⁰ , Langley (2012) ¹⁴⁴ , Lewis (2011) ¹⁴⁵ , Lewis (2012a) ¹⁴⁷ , Lewis (2012b) ¹⁴⁶ , Lewis (2015) ¹⁴⁸ , Richardson (2014a) ¹⁵² , Richardson (2014b) ¹⁵³ , Sims (2016) ¹⁵⁴
Number of studies which compare effects of different types of message or campaign content on physical activity	4: Eves (2012b) ¹⁴⁰ , Lewis (2011) ¹⁴⁵ , Lewis (2012a) ¹⁴⁷ , Lewis (2012b) ¹⁴⁶
Number of studies which compare effects of different types of message or campaign content on smoking	5: Langley (2012) ¹⁴⁴ , Lewis (2015) ¹⁴⁸ , Richardson (2014a) ¹⁵² , Richardson (2014b) ¹⁵³ , Sims (2016) ¹⁵⁴
Number of studies which compare effects of different types of message or campaign content on other behaviours	0
No of studies which compare effects of targeting specific groups	0
No. of studies which compare effects of the “source” of the message	1: Langley (2012) ¹⁴⁴
Type of message / content Positive vs negative messages; simple vs. complex; motivational vs. volitional; point of choice; multi-component; government/charity-funded; secondhand smoke exposure	

The UK evidence on different types of message and campaign content is based on nine studies on two types of behaviour – physical activity (four studies) and smoking (five studies).

The UK has been exposed to very diverse tobacco control campaigns and is therefore a good setting in which to investigate the effect of different types of messages. Several studies on tobacco campaigns investigate the differential impact of “positive” (eliciting happiness, satisfaction or hope) and “negative” (eliciting fear, sadness, guilt, anger or disgust) messages,¹⁵²⁻¹⁵⁴ and find that both are effective. While, unlike negative messages, positive messages have not been found to have an effect on recall,¹⁵³ both positive and negative messages have been shown to influence information seeking,¹⁵² and smoking behaviour,¹⁵⁴ with positive campaigns having a bigger effect. This indicates that recall does not necessarily translate into changes in behaviour, which should be taken into account in studies which assessing the ‘effectiveness’ of campaigns by measuring recall.

There is evidence from one study that the source of the campaign is important,¹⁴⁴ with government and charity-funded campaigns more effective at triggering quitting behaviour than pharmaceutical company-funded campaigns. None of the primary studies compared the effects of targeting on specific groups, however one primary study reports that targeted campaigns about the risks of secondhand smoke exposure increased the odds of a home being smokefree more than tobacco control campaigns overall.¹⁴⁸

The physical activity studies are based on poster campaigns to increase stair use. They suggest that multicomponent messages (e.g. providing information on calories burned as well as posters directing people to the stairs) delivered at the point of choice (or ‘volitional’ messages) are more effective than those which have a single component and/or are ‘motivational’.^{140,145,146} One of the physical activity studies suggests that simple messaging may be more effective in busy settings.¹⁴⁷

Intervention scale: Findings from review of UK primary studies

None of the UK primary studies examined whether scale – ie. whether a campaign was implemented at local, regional or national level – was a potential mediator of effectiveness.

Summary

We reviewed evidence regarding characteristics of mass media campaigns which may be associated with effectiveness. Evidence was drawn from the review of reviews (reported above, see Chapter 2) and from an additional review of recent UK primary studies (published between 2011 and 2016).

Overall, there was limited evidence from the reviews on the contribution of media campaign characteristics to effectiveness, with only a small number of reviews containing statistical analyses to assess the impact of different characteristics. There was little evidence regarding the role that theory may play in campaign effectiveness, with most reviews simply listing which theories, if any, had been referred to in intervention studies. There was limited

evidence regarding media channel as a potential moderator of effectiveness in three reviews, with findings varying depending on the types and topics of campaigns, and mostly having limited relevance to the contemporary UK context. Longer intervention duration or greater intensity/exposure were found to be related to effectiveness in several reviews, with most of the evidence relating to tobacco and to a lesser extent sexual health campaigns; however, there was little clear guidance or consensus on how long or intense campaigns should be to produce effects. Lack of formal statistical analysis in the reviews meant that clear conclusions about the type of messaging content that is most effective could not be drawn. There was evidence from the reviews that social norms campaigns and negative (ie. hard-hitting messages on health consequences) messaging could change behaviour but little evidence as to whether these were more effective than other approaches. The reviews indicated that targeting can be effective, suggesting that messages needed to be appropriate to the target audience taking into account a range of characteristics including age, gender, culture, level of engagement in the activity. There was evidence to suggest that targeting specific subgroups such as the young could be effective, but with caution to avoid patronising or stereotyping. There was no evidence from the reviews on the scale of campaign (ie. whether it was implemented at national, regional or local level) acting as a moderator of effectiveness. Regarding source, there was evidence that tobacco industry sponsored campaigns were not effective.

There was limited evidence from the review of UK primary studies (which were mostly concerned with tobacco, plus a small number of physical activity interventions) regarding the use of theory as a potential moderator of campaign effectiveness. Only one study compared different media channels within the same study (a comparison of audience engagement through different social media channels). Evidence from the primary studies regarding intervention duration or intensity/exposure as moderators of effectiveness was consistent with that from the reviews, generally finding that more sustained and greater intensity campaigns were more effective. A benefit of reviewing the UK primary studies evidence was that a greater mix of message types have been evaluated, and this evidence suggests that positive messages may also be important, with both positive and negative messages impacting on smoking behaviour. Regarding messages for physical activity, there was mixed evidence regarding effective messages for poster campaigns promoting stair

use. There was limited evidence that government and charity campaigns may be more effective than those from pharmaceutical companies. As with the reviews, there was no evidence regarding scale as a moderator of effectiveness.

Chapter 6: Stakeholder engagement

Stakeholders have been engaged throughout the study but particularly in the development and initiation of the research and the interpretation of findings. This includes public engagement. In this chapter we describe stakeholder and public engagement in:

- Developing the study
- Refining research plans
- Interpreting findings

Development of the study

The research questions for the study were shaped by the commissioning brief from NIHR, but we involved stakeholders and particularly the public in preparing the application. The principal investigator (PI) of the study is public engagement lead for the UK Centre for Tobacco and Alcohol Studies. UKCTAS convenes public engagement groups on smoking and alcohol use, two of the main public health issues covered by our research. The PI set up a smoker's panel (of smokers and recent ex-smokers) in Bath, when she was based at the University of Bath prior to this study and the panel started meeting in 2008. The panel was reconstituted at the University of Nottingham, another UKCTAS University also involved in this study, from 2011 when the PI moved to Stirling. The Nottingham panel helped shape the study scope, particularly commenting on key aspects of the proposal including the lay summary. After the study was initially considered for funding by NIHR, the PI had established an alcohol public engagement panel at the University of Stirling and the research proposal was discussed with them at the time the proposal was resubmitted before funding was secured.

Two initial lay members for the study were identified from the smoker's panel when it was held in Bath and another previous study from the team on smoking in pregnancy. However two years passed between the initial development of the outline for the study and funding

being secured and contact was lost with the Bath-based panel member while the smoking in pregnancy lay adviser moved on to support another study conducted by the PI's research team. Once the study finally began we were pleased to secure the involvement of Mr George Vekic who served as PPI representative on the study advisory group. Mr Vekic is a member of the UKCTAS alcohol discussion group and also works as a digital media officer, so had an interest in the study topic.

Stakeholders from a range of organisations were also involved in developing the study. The research team consulted colleagues at Health Scotland, the Scottish Government and the Department of Health while developing the study proposal. We also engaged academic and practice colleagues who subsequently agreed to join our advisory group. This included representatives from two Collaborations for Leadership in Applied Health Research and Care (CLAHRCs), one in North London (links facilitated by research team members at UCL) and one in the East Midlands of England (links facilitated by research team members at Nottingham).

Refining research plans

As the study developed we continued to engage with professionals and the public. In particular, we sought input on the development of the logic model for the study. The initial model was discussed with: the project advisory group; the UKCTAS smoker's panel; the UKCTAS alcohol public engagement group (including our PPI representative Mr Vekic); and representatives of two CLAHRCs – East Midlands and North Thames. Their response to the model helped refine its content and make more explicit the assumptions underpinning the relationship between the resources and activities in the model and the range of possible outcomes that we expected might arise from public health mass media campaigns.

Once we had initial findings from the review of reviews element of the study these were circulated to members of both UKCTAS public engagement panels and members reflected on their own experiences of viewing public health mass media campaigns. Panel members were not convinced that campaigns alone could change health behaviours but did agree

that memorable campaigns helped build knowledge and awareness around the benefits of taking up health behaviours (i.e physical exercise) or modifying harmful behaviours (i.e smoking cessation). They also agreed that campaigns, if well resourced, designed and sustained, could help change social norms around some behaviours (such as condom use to promote sexual health, or promoting compliance with smokefree legislation).

One challenge we encountered was in discussing emerging findings with groups other than our public engagement panels. The research team were focussed on trying to complete the literature reviews in the face of a large volume of material and had limited time to prepare interim finding briefs, particularly when it became clear how complex the findings of the literature were and that clear directions of effect or impact on key outcomes was difficult to distil into simple summaries. We did approach both CLAHRCs to see if we could discuss review progress at CLAHRC public engagement or planning meetings but were not able to secure appropriate slots at these meetings and CLAHRC colleagues felt that final outputs from the study might be more appropriate for dissemination. In addition due to limited research team time we were not able to engage one youth organisation, Young Scot, in discussing interim findings and as a result of this public engagement activity not taking place we had an underspend (now returned to NIHR) in our public engagement budget. Instead we were able to involve young people in discussing findings from our final report through a separate organisation (City of Edinburgh council), as we set out below, and this proved very valuable.

A primary focus, therefore, for our stakeholder engagement was end of study dissemination and discussion and this is described in the sections that follow.

Interpreting findings

Once findings from the study were available the research team invested considerable time and effort in organising a national event to discuss and help interpret results as well as a youth engagement meeting. Each of these is described here.

End of study event

On the 28th September 2017, an end of study event was hosted in the Conference Centre at the Iris Murdoch Building, University of Stirling. A series of presentations on the project's background, methodology and results was given by the research team who represented all the academic teams involved (University College London and the Universities of Nottingham, Glasgow and Stirling). In addition to sharing the findings of the review, the purpose of the event was to discuss the findings with interested stakeholders and experts to identify strengths and limitations of the evidence, identify implications for commissioning/using mass media campaigns, and to identify recommendations for future research. The event was also intended to inform the final report for the study.

An open invitation (see flyer in Appendix 9) was issued to relevant policy and practice networks in the UK. Personal invitations were also sent to the study advisory group and key organisations who design and deliver mass media campaigns for public health, such as Public Health England and the Scottish government. Forty nine delegates attended the event. This included representatives from local and national charities, advertising agencies, NHS staff, civil servants, clinical academics, public health and marketing researchers, research students and the PPI representative for the study. Delegates had a range of experience from a Deputy Director of a Scottish government department to Masters students. There was also representation from across the UK: attendees had travelled from Northern Ireland, Orkney, Shetland, the northeast and northwest of England and London, in addition to those from other UK regions.

The event included as a series of presentations from the research team on all the elements of the study. The Principal Investigator opened the day and began by showing a series of videos of past mass media public health campaigns (see Box 4). Presentations of study findings were then followed by question and answer sessions and small group discussions with feedback to the room (see the Event Agenda in Appendix 10). Both the event's presenters and attendees were encouraged to share slides and views via social media.

- HEBS* (1995) Gavin Hastings *“Did you know that walking a mile...”*
- HEBS (1997) The Lifesaver *“You can save a life. Your own”*
- COI & Department of Transport (1996) Christmas anti drink-drive: accident-scarred woman at mirror
- HEBS (c1998) ‘Night out’, Think About It *“You spend ages thinking about what you put on your body, how long do you spend thinking about what you put in it?”*
- NHS Smokefree (2007) Hooked (fish-hook)
- NHS (2005) Family and friends watching TV *“Secondhand smoke is a killer”*
- This Girl Can & National Lottery (2017) *“Phenomenal Woman”*

*Health Education Board for Scotland, now NHS Health Scotland

Box 4: Previous UK televised (and online video) mass media public health campaigns

Key points raised among those attending related to a range of themes. Some of these focused on the limitations of the evidence our study identified. Overall, delegates had expected the evidence on the effectiveness of mass media campaigns to be more conclusive. There was a general perception, particularly amongst those involved in planning or delivering services or promoting public health interventions, that tobacco control mass media in general was highly effective and cost-effective and that this might be the case for mass media on other public health topics. Our review did find that tobacco control campaigns can be effective but this varied based on the type, duration and content of the campaign. Evidence for campaigns on other behaviours was also mixed and in some cases very limited. This challenged the views of some delegates and meant that some of the questions and discussion at the event were not straightforward.

Delegates had a range of questions and useful feedback on the limitations of our reviews and the evidence in general. For example they discussed the parameters of our review of systematic reviews, the changing media landscape and how this might affect the available evidence, the time lag between campaigns and evaluations being published, and the fact that the results of many campaigns particularly at regional level are not captured in the peer-reviewed literature. Attendees also reflected on their own experience (in both research and practice) compared with the review evidence. This included issues to do with fitting mass media campaigns into wider political messages, the fact that diet and nutrition

campaigns can come from commercial or industry sources (unlike for tobacco, where marketing by industry is not permitted in the UK) and also that commercial advertising involves large budgets which it is difficult for public health campaigns to counteract (alcohol advertising was highlighted as a particular example). There are also limited available resources for public health campaign evaluations and where decisions have to be made, resources will focus on designing and delivering the campaign rather than research around it. Limited resources also result in difficult choices being made around the medium of communication, with a more recent focus just on social marketing or online campaigns. The literature identified by the study had limited evidence on campaigns run via digital media only and evaluating these should be a priority for the future.

Discussions also focused on why the evidence differs between health topics. For example, for some of health behaviours, it can be more difficult to define what the 'message' should be. Those planning campaigns may favour positive rather than fear-based messaging, but questions remain about which is more effective. With limited budgets, how should campaigns be targeted? The evidence is unclear for campaigns aiming to reach particular population groups. Some of the evidence in our review suggests a whole population approach may be desirable, but again has cost implications. Finally, delegates discussed how indicative evidence identified in our reviews suggests that campaigns focussed on increasing healthy behaviours may be more appealing or effective than reducing unhealthy behaviours. This may be influenced by some of the unhealthy behaviours involving dependence-forming products including tobacco, alcohol and illegal drugs and using mass media to change behaviour around these may be particularly challenging. The insights and suggestions raised by delegates have helped inform how we have approached key sections of this final report and have directly informed how we describe the context and implications of our findings.

Engagement with young people

Two members of the research team (Prof Linda Bauld and Dr Vittal Katikireddi) met with fifteen young people on the 29th of September 2017 to discuss the findings of the study and the logic model that had been developed to inform the research. The meeting took place in the Edinburgh City Council Leisure Facility at the Commonwealth Pool, Edinburgh. The

young people were attending a youth club which provides access to gym and pool facilities at the venue along with snacks, board games and art materials held every Friday evening during term time. The club is known as 'Open Alt Hours' and is funded by Edinburgh City Council in partnership with Edinburgh Leisure. Research team attendance at the club was made possible by Laurene Edgar, youth work organiser, who Dr Katikireddi contacted after obtaining her contact details from a member of the study advisory group.

The researchers met with two separate groups of young people between the ages of 11 and 15. In the first group, there were six boys and two girls, and in the second group, seven girls. The researchers showed some examples of public health mass media campaigns on a television screen connected to a laptop. These ranged from television campaigns on physical activity, alcohol and chronic disease prevention from the early 1990s to slightly more recent NHS campaigns on smoking cessation and second hand smoke from around 2005-2007 and concluded with a current online video of the 'This Girl Can' physical activity campaign funded by the National Lottery. Young people had mixed views about the ads, perhaps preferring more contemporary examples and just one or two of them recognised the 'This Girl Can' film.

The researchers then asked the young people to note down on paper what they thought constituted a 'good' or 'appealing' advertisement. Some of the main suggestions are included in Box 5.

With the first group (which was a slightly longer discussion than with the second group) the researchers also distributed copies of the study logic model with the details of the model removed and just the headings showing. The researchers explained the purpose of the model and the young people then wrote down some of the elements they thought might connect a public health advertisement with short, medium and longer term outcomes.

They were able to describe in some detail the key 'inputs' needed for a mass media campaign including funding, staffing, equipment, ideas and production. They were also adept at identifying key activities after inputs were secured including where advertisements or other forms of marketing should be placed (TV, social media, YouTube etc.) and how the

public and others should be informed about the release of a campaign. They were less sure about the pathway after that between people viewing an advert or other campaign output and longer term outcomes. They articulated very clearly what the ideal behavioural outcomes would be in terms of reducing harmful behaviours (stopping smoking, being less sedentary) or increasing healthy behaviours (eating a more balanced diet, being more physically active). They also understood that these behavioural outcomes would be linked to longer life or reducing the risk of chronic diseases such as cancer. However, unsurprisingly, the mechanisms for change between viewing a mass media campaign and possible behaviour change were much more difficult for them to describe.

Music	Before and after images of the same person	Featuring a celebrity
Strong colours	Attractive people	Humour
Something unusual or strange that makes you notice	People doing silly things	Making scientific information simple
Cartoons	Showing what needs to be changed – i.e smoking, drinking	Not too long – a short ad
Featuring normal/real people	Logos people recognise	Words on the screen as well as spoken
Outdoor/green areas	Bright positive images	

Box 5: What makes a good health promotion advertisement? Young people’s suggestions

Despite this, the concept of the logic model and how inputs and activities could be linked to longer term outcomes was something which appeared to resonate with them and supports the concept of the logic model approach. Their notes also illustrate how an unappealing or perhaps not well sustained campaign could be ignored and might make little difference.

They also talked about how young people could view a campaign (on second hand smoke, for example) and discuss behaviour change with parents or carers. One girl in the second group gave examples of a friend who had seen campaigns about the harms of second hand smoke exposure and talked to both her parents about their smoking and smoking cessation. The discussions with these young people were informative at the stage when the team were drafting the final report for the study and their views have been useful in assisting us to

write the discussion section of the report, the further description of the logic model and our summary of findings.

Chapter 7: Discussion and conclusions

The aim of this study was *to provide the NHS, local authorities, government and other organisations with evidence on the effective use of mass media to communicate public health messages*. We conducted four reviews underpinned by a logic model of how mass media campaigns influence behaviour. These were:

- A review of existing systematic reviews (Review A). This comprised a review of 36 English-language systematic reviews published between January 2000 and January 2016 on the effectiveness of mass media campaigns across six health topics. We identified 12 reviews of mass media addressing tobacco use, nine addressing sexual health, seven addressing physical activity and three addressing illicit drug use, with five reviews addressing ‘mixed topics’, ie. more than one of our six health topics. Despite none of the reviews meeting our inclusion criteria for alcohol use or diet mass media interventions, studies evaluating campaigns targeting alcohol or diet were included in four mixed health topics reviews. Findings from this review are presented in Chapters 2 and 5.
- A review of primary studies examining alcohol mass media campaigns (Review B). This was conducted because Review A found no reviews focusing specifically addressing alcohol and limited evidence relating to alcohol in the reviews covering mixed topics. The parameters for the review were English-language primary studies (published up to July 2016), that assessed the effectiveness of mass media public health campaigns to reduce alcohol consumption and related harms. Studies examining drink driving mass media interventions and college campus campaigns were excluded. Findings from this review, which included 24 studies, are presented in Chapter 3.
- A rapid review of cost-effectiveness evidence (Review C). This involved a rapid review of 13 systematic and seven non-systematic reviews, published between January 2000 and January 2017, which assessed economic studies that evaluated

both the costs and benefits of mass media campaigns for any of our six health topics. Findings from this review are presented in Chapter 4.

- A review of primary studies of mass media campaigns conducted in the UK and published between January 2011 and September 2016 (Review D). The main aim of this review was to provide additional, UK-relevant evidence and evidence on new media to complement evidence from Review A regarding campaign characteristics which might be associated with effectiveness. Studies were eligible for inclusion in this review if the paper was published in or after 2011 and the study was conducted in the UK; multi-country studies were eligible if findings for the UK were reported separately. The campaigns had to address one of our six health topics. Findings from this review, which included 25 studies, are presented in Chapter 5.

In addition, we conducted stakeholder engagement work, described in Chapter 6.

In the remainder of this chapter we aim to synthesise our findings across the different chapters, to reflect on implications for our logic model and gaps in the evidence, and to identify pointers for future research.

How effective are mass media campaigns?

We addressed this question with three reviews: a review of 36 systematic reviews (Review A), a review of 24 primary studies on alcohol mass media campaigns (Review B), and a cost-effectiveness review of 20 reviews and systematic reviews (Review C).

Review A, which included 36 systematic reviews, brought together evidence on the impact of mass media campaigns on health behaviours (including alcohol use, illicit substance use, diet, physical activity, sexual and reproductive health, and smoking cessation and prevention) for the first time. Overall, the evidence base for the effectiveness of mass media for behaviour change is mixed. First, the amount of evidence varies across health topics, with most evidence relating to campaigns addressing tobacco use followed by sexual health and physical activity. The strength of evidence from reviews also varies. Using a modified

GRADE approach, we found moderate evidence for the positive effects of mass media campaigns on reducing sedentary behaviour and sexual health-related behaviours such as condom use. Low certainty evidence for positive impacts on diet was found, although the overall volume of evidence on diet was very limited. The impact of the mass media on tobacco use and physical activity, such as stair use and brisk walking, was mixed, but with low certainty evidence in both cases. In contrast, the available and again low certainty evidence on illicit drugs, suggests no impact of mass media. All reviews found considerable variation between individual studies as described in a meta-analysis or narrative synthesis, suggesting that variations in implementation of the campaign and evaluation methods may be important.

For treatment seeking behaviours, there was low certainty evidence that mass media campaigns can help increase the use of sexual health clinics or services. Whether media campaigns can prompt calls to telephone quitlines for smoking cessation has been fairly extensively studied in five reviews. Overall, the direction of effect looks positive, with campaigns serving to prompt calls to quitlines, but variation in results and the quality of studies was identified – therefore there is only moderate certainty in the strength of this finding. A recent study examining the impact of Scottish tobacco control mass media campaigns (2003-2012) found a cumulative increase in calls to a quitline, sustained for 6 months.¹⁶¹ This is further evidence of a positive direction of effect; however, the study found no impact on NRT prescription volumes.

Evidence on distal outcomes – reduction in illnesses, improved population health, reduced health service usage, societal change, policy change and impact on inequalities – was also examined, and little evidence was found. However, distal outcomes can be defined in different ways to those adopted in our logic model, and can for example include de-normalisation, longer term shifts in public attitudes regarding the acceptability of a behaviour. One systematic review noted: “There is evidence of good quality (1&2+, C), which shows an effect of mass media interventions on attitudes towards smoking and intentions to smoke among young people under 25 years”.⁴³ This suggests that mass media programmes may have contributed to the de-normalisation of smoking amongst young people.

Changes in health behaviour are the ideal outcome of mass media health campaigns. However, theories of health behaviour change are generally based on an assumption that behaviour change occurs incrementally or via changes in mediating variables such as changes in knowledge, attitudes, self-efficacy and intentions.^{7,162,163} A more realistic assessment of the value and effectiveness of mass media campaigns takes into account the impact of such campaigns not only on behaviour but also on these mediating variables. Our review of reviews examined evidence regarding indirect behavioural outcomes (intentions to engage in, reduce or desist from unhealthy behaviours or to engage in healthy behaviours) and social cognitive outcomes (awareness, knowledge, attitudes, beliefs, norms and self-efficacy).

In the fifteen reviews examining the impact of mass media campaigns on knowledge and awareness, there was evidence of positive impacts on increased knowledge and awareness in relation to sexual health, such as knowledge of HIV prevention, contraception and sexual health services. Positive results were also reported for increased knowledge and awareness of tobacco risks and services to help quit, increased knowledge and awareness for diet, and for physical activity. There was mixed evidence regarding the impact on knowledge and awareness of illicit drug use. In the seven reviews examining the impact of mass media campaigns on intentions, there was generally positive evidence of impacts on intention to increase physical activity (although from a high risk of bias review), and there was some evidence of positive impacts on intention to quit smoking. There was mixed evidence regarding intention to stop the use of illicit drugs, and to use contraception. In ten reviews reporting on attitudes beliefs and self-efficacy, there was evidence of positive impacts on beliefs about risk of pregnancy and the use of condoms, from reviews of studies in low income countries. There was mixed evidence of the impact on attitudes towards illicit drug use and tobacco. A mixed topics review that included studies from the UK reported positive results on attitudes to reducing tobacco use and increasing physical activity.

Some previous reviews and meta-analyses have reported stronger evidence that media health campaigns can produce positive effects on behaviour change, but have also suggested that this differs with the type of behaviour. Anker and colleagues, in a meta-

analysis, found a significant effect for the use of mass mediated health campaigns on behaviour across 51 primary studies, but the size and significance of campaign effects varied across target behaviours, with campaigns working best for increased transportation safety and also better than controls for cardiovascular disease, physical activity and nutrition.¹⁶⁴ Wakefield and colleagues reviewed the outcomes of mass media campaigns in the context of a wide range of health-risk behaviours (e.g., use of tobacco, alcohol, and other drugs, heart disease risk factors, sex-related behaviours, road safety, cancer screening and prevention, child survival, and organ or blood donation), and concluded that mass media campaigns can produce positive changes or prevent negative changes in health-related behaviours.⁶ They concluded that success of mass media campaigns was greater when the target behaviour was one-off or episodic (e.g., screening, vaccination, children's aspirin use) rather than habitual or ongoing (e.g., food choices, sun exposure, physical activity). Many of these one-off behaviours were not included in our review, and our focus on lifestyle behaviours may have contributed to the overall weaker evidence of success in actual behaviour change as opposed to its mediating factors. Of the behaviours that were included in our review, the strongest evidence of success in behaviour change was seen for reducing sedentary behaviour and improving sexual health behaviour (e.g. wearing a condom). The Anker meta-analysis identified a weighted mean effect size of .05 for effects of campaigns on behaviour change, and proposed that this 5% benchmark could provide a standard against which future media intervention studies could assess success.¹⁶⁴ In the reviews that we identified, where there were sizes of effect for campaigns to reduce sedentary behaviour or increase physical activity, these generally met or exceeded this benchmark for success, and those for condom use tended to produce somewhat greater effects. One interpretation of these findings is that media campaigns are most successful when the behavioural goal is simple, a conclusion also drawn in an HDA report from 2004.¹⁶⁵ It might be anticipated that the more complex the behaviour change - for example, if it involves a component of addiction as with tobacco or illicit drugs - the more back-up is required to supplement the mass media campaign. Although our review was limited in its evaluation of contextual moderators, some of the included reviews – for example, the Cochrane review of tobacco control campaigns – conclude that these can be important in the context of wider or multiple interventions, such as a comprehensive tobacco control programme.²⁷ This should include the appropriate support services. Looking across health behaviours, Wakefield and

colleagues highlight that concurrent availability of and access to key services and products are crucial to persuade individuals motivated by media messages to act on them.⁶

A further aspect of context is the prevalence of the behaviour in the population. Naugle and Hornik, in reviewing the literature on child survival in low- and middle-income countries, highlight that for mass media campaign effects to be detected, there “must be room to move the population on the target behaviour” (p. 208).¹⁶⁶ It is possible that this contributes to the positive outcomes of some mass media sexual health campaigns in non-OECD countries where baseline rates of condom use were low.

We found additional evidence regarding the effectiveness of mass media campaigns in Review B. Our systematic review of primary studies of mass media campaigns targeting alcohol was the first comprehensive synthesis of evidence from such campaigns. The overall quality of the evidence base was low, predominantly due to the use of weak study designs, risk of participant selection bias and self-reported outcome data.

Overall, we found very limited evidence that campaigns were associated with reductions in alcohol consumption, although the majority of reports did not state that reducing consumption had been an aim of the campaign. Most campaigns had aims such as improving knowledge, awareness and communication about alcohol. Despite this, it is likely that reducing consumption was an implicit long-term aim of all campaigns, as they all targeted outcomes that can be considered precursors to consumption within our logic model. Longer term evaluations following repeated exposure to campaign messages may be needed to detect changes in consumption, of which we found few. There are important social, cultural and environmental barriers to alcohol behaviour change, such as widespread alcohol advertising and pro-alcohol cultural norms. This provides a challenging context that contrasts with tobacco, for example, where advertising is highly restricted and norms are anti-smoking. Other reviews have concluded that social norms interventions were ineffective at reducing alcohol consumption in university and college students and that reductions in drink-driving could not be attributed to mass media campaigns alone.^{101,167}

Our findings add to this evidence and are consistent with the conclusion of Snyder *et al.* that mass media campaigns should have modest expectations of effect on health behaviour.¹⁶⁸

Alcohol campaigns in particular face a number of competing forces which may limit their effectiveness at reducing consumption.

There was some evidence in Review B, from mainly weak quality studies, that alcohol mass media campaigns were associated with increases in information-seeking and treatment-seeking behaviour. There were mixed findings regarding other proximal outcomes such as attitudes, beliefs, intention and self-efficacy. Mass media campaigns face a number of challenges in terms of these sorts of outcomes: they may be perceived to be aimed only at very heavy drinkers (meaning that many in the population disregard them as not relevant), and can lack a clear call-to-action, typically advising limiting units consumed rather than abstinence. There was mixed evidence of interaction with campaigns and discussion or onward transmission of campaign messages, from mostly weak quality studies. More encouragingly, studies reported high levels of campaign recall, and evidence that campaigns were associated with increases in knowledge about alcohol, especially where it had initially been low. This is a key finding and perhaps indicates where mass media messages about alcohol are currently best targeted to achieve change. This is particularly important given that knowledge about alcohol unit consumption guidelines and the health risks associated with alcohol consumption is reported to be very low.¹⁶⁹

Our searches for published English-language evaluations with no time limit applied produced only 24 campaigns (in July 2016). In comparison, a content analysis study by Dunstone *et al.* identified 72 English-language campaigns conducted between 2006 and 2014.¹⁷⁰ This suggests a large proportion of alcohol campaigns have not been evaluated and published. A greater investment in alcohol campaign evaluation is needed in order to better understand its effectiveness. We found only two reports of campaigns that used online or social media as a primary channel.^{71,92} An important challenge for future research is therefore to evaluate the effectiveness of newer digital media channels to communicate alcohol health messages.

Regarding the cost-effectiveness of mass media campaigns, Review C examined evidence from 20 systematic and non-systematic reviews (published between January 2000 and January 2017), reporting on 15 individual primary studies. Included reviews were required

to assess economic studies which evaluated both costs and benefits of mass media campaigns (i.e. full economic evaluations, not just intervention costs or cost savings). Taken together, the reviews and the findings of the primary studies within the reviews provided moderate evidence that tobacco control mass media campaigns can be cost-effective. There was weak evidence in relation to diet campaigns – restricted to a campaign seeking to reduce salt intake – and physical activity, and no evidence in relation to the cost-effectiveness of sexual health campaigns, despite efforts to identify such evidence in systematic reviews.

Recent work by Marsh and colleagues on how to prioritise investments in public health ranked 14 intervention types in order of cost-effectiveness (cost per QALY gained).¹⁷¹ While increasing alcohol and tobacco tax by 5% topped the list, national mass media campaigns for smoking were third in the list and national mass media campaigns for obesity were fifth in the list. However, overall, evidence on the cost-effectiveness of mass media campaigns was extremely limited for all health behaviours except smoking. Regarding smoking, the studies in the included reviews generally found tobacco mass media campaigns to be cost-effective. However, the fact that only effective interventions tend to be taken forward to an economic evaluation, and hence the potential for bias in reviews on this topic, should be taken into account.

How effective are mass media campaigns with different target populations?

The majority of the 36 reviews included Review A provided evidence on whether the effects of mass media campaigns were similar or different across sub-populations. Our analysis of this evidence found that mass media campaigns may reach and affect groups in the population differently. Although age differences were not always measured, reviews of tobacco and illicit drug campaigns found that mass media appeared to be more effective for young people and particularly younger children than for older teenagers. There was modest evidence that mass media outcomes for tobacco, sexual health and physical activity do not differ by gender and no clear consistent evidence was found for ethnicity or socio-economic

status. Looking at baseline measures of health behaviours, physical activity campaigns may be more effective for the less active or obese people than others.

This paucity of good quality evidence on the differential effects of campaigns on behaviour across different population groups is a concern. It has been suggested that health promotion interventions might increase rather than decrease inequalities, and particularly socioeconomic inequalities, in health, since messages and interventions may have a differential take-up and success across different social class groups.^{37,40,43} The reviews included in Review A, all based on tobacco control campaigns in contexts where there are marked inequalities in smoking prevalence and morbidity, provide mixed evidence for whether effects on behavioural outcomes vary across socio-economic groups. Nevertheless, the evidence is more consistent that interventions will be more effective if appropriately developed and targeted to reach the intended audience, and this will be important to ensure that campaigns work to reduce inequality. We are aware of an ongoing systematic review on targeted mass media interventions promoting healthy behaviours to reduce risk of non-communicable diseases in adult, ethnic minorities.¹⁷²

Evidence for the greater effectiveness of campaigns among the young, mostly based on tobacco control campaigns, is consistent with much of the communications literature. Advertising is well known to work effectively in children and young people,^{173,174} and advertisers seek to use this to establish behaviour and brand preference at an early age. The evidence from this review suggests that anti-tobacco mass media messages can also be effective in the young, and that the impact may be greater on uptake of smoking than on cessation in adults, possibly because it is simpler to change behaviour before the onset of addiction.

What characteristics of mass media campaigns are associated with effectiveness?

We sought to identify characteristics of mass media campaigns which may be associated with effectiveness drawing on evidence from the review of reviews (Review A) and from the additional review of UK primary studies (Review D). Overall, there was limited evidence on

the contribution of media campaign characteristics to effectiveness, with only a small number of reviews and studies containing statistical analyses to assess the impact of different characteristics.

Across all the reviews included in Review A, there was little evidence regarding the role that theory may play in campaign effectiveness, with most reviews simply listing which theories, if any, had been referred to in intervention studies. There was limited evidence regarding media channel as a potential moderator of effectiveness in three reviews, with findings varying depending on the types and topics of campaigns, and mostly having limited relevance to the contemporary UK context. Longer intervention duration or greater intensity/exposure were found to be related to effectiveness in several reviews, with most of the evidence relating to tobacco and to a lesser extent sexual health campaigns; however, there was little clear guidance or consensus on how long or intense campaigns should be to produce effects. One of the reviews noted a recommendation from the USA Centers for Disease Control that advertisements should be aired for a minimum of six months to affect awareness and up to 24 months to impact on behaviours, and should be aired as continuously as possible.⁴⁴

Lack of formal statistical analysis in the reviews included in Review A meant that clear conclusions about the type of messaging content that is most effective could not be drawn. There was evidence from the reviews that social norms campaigns and negative (ie. hard-hitting messages on health consequences) messaging could change behaviour, but little evidence as to whether these were more effective than other approaches. The reviews included in Review A indicated that targeting can be effective, suggesting that messages needed to be appropriate to the target audience taking into account a range of characteristics including age, gender, culture, level of engagement in the activity. There was evidence to suggest that targeting specific subgroups such as the young could be effective, but with caution to avoid patronising or stereotyping. There was no evidence from the reviews on the scale of campaign (ie. whether it was implemented at national, regional or local level) acting as a moderator of effectiveness. Regarding source, there was evidence that tobacco industry sponsored campaigns were not effective.

The UK primary studies which we examined in Review D for evidence regarding campaign characteristics were mostly concerned with tobacco, plus a small number of physical activity interventions. This limited the value of the evidence for other health behaviour topics, but an advantage of examining this evidence was that all the studies were relevant to the UK context, and when examining the role of message, the primary studies examined a wider range of message types than did the reviews. The evidence from the UK primary studies in Review D suggested that positive messages may also be important, with both positive and negative messages impacting on smoking behaviour. Regarding messages for physical activity, there was mixed evidence regarding effective messages for poster campaigns promoting stair use. Evidence from the primary studies included in Review D regarding intervention duration or intensity/exposure as moderators of effectiveness was consistent with that from the reviews, generally finding that more sustained and greater intensity campaigns were more effective. There was limited evidence that government and charity campaigns may be more effective than those from pharmaceutical companies (eg. NRT manufacturers). Only one study compared different media channels within the same study (a comparison of audience engagement through different social media channels). As with Review A, there was little evidence regarding the use of theory as a potential moderator of campaign effectiveness, and no evidence regarding scale as a moderator of effectiveness; the latter was not surprising, as any statistical comparison of the effect of scale (eg. national vs local level campaigns) is more likely to occur at a review level than in a primary study, although none of our included reviews examined this.

Evidence from other literature regarding the characteristics of mass media campaigns associated with effectiveness is limited. A recent review by the US Centers for Disease Control and Prevention of physical activity mass media campaign design suggested that campaign success was more likely if a number of campaign principles – formative research, audience segmentation, message design, channel placement, process evaluation, and theory-based – were used as part of campaign design and planning.¹⁷⁵ Some of these principles were tested in a recent meta-analysis, published while our study was ongoing.¹⁶⁴ Five campaign design principles thought to be associated with effectiveness were examined in the meta-analysis: the use of formative research to help develop messages and campaign content, the use of theory, message, channel, and ‘environmental supplements’, in this case

defined as efforts to educate healthcare providers and supplementary materials/services (such as free condoms or reduced cost screening). The study differed from ours in that it reviewed primary studies rather than reviews, and included a wider range of health topics. In total, data from 63 articles were included in the meta-analysis, which overall found little evidence that principles of effective campaign design explained a significant amount of heterogeneity in effect sizes. Some results were described by the authors as “puzzling”, such as findings that the use of formative research significantly reduced effects on behaviour change or that there was no improvement in outcomes when campaigns were theory-driven, or that the use of more channels to disseminate messages was associated with lower effects on knowledge. The authors suggested that some inconsistent or unexpected findings may have been explained by small numbers of studies in some of the moderator analyses, by confounding by multiple moderators, or simply by studies failing to report certain moderators.¹⁶⁴

A recent review of mass media tobacco campaigns which focused on the relative effectiveness of different campaign characteristics found that young people were more likely to recall and think about advertising that included personal testimonials, a surprising narrative, and intense images, sound, and editing; however, it found mixed evidence regarding use of health consequences messages, a secondhand smoke theme or a social norms theme.¹⁷⁶ Since commencing our own review of systematic reviews, the Cochrane systematic review on mass media interventions for preventing smoking in young people has been updated,^{35,177} adding one more RCT study to the evidence base but not changing the overall findings. Regarding mass media channels used in this updated review, the authors note that the “inclusion of only two studies from the last 10 years is concerning, particularly considering the rising use of social media among youth. More high-quality studies are needed” (p.3).¹⁷⁷

What are the implications for our logic model?

Our four reviews indicate that there is a lack of theory employed in the development of mass media campaigns and their evaluation. In this respect our logic model provides a

useful starting point for researchers, practitioners and commissioners planning future campaigns. The lack of theory underpinning current campaigns suggests a greater need to recognise the importance of utilising existing theories, concepts and logic models and to apply this knowledge in a systematic manner to the processes of campaign planning, development, implementation and evaluation. In particular, there is a need for future campaigns to be based upon a deeper understanding of the fundamental principles of communication, persuasion, and changing social norms, as well as an appreciation of the interplay between communication theories, behaviour change theories and the wider socio-political context in which mass media campaigns often operate. Indeed, mass media campaigns rarely operate in a vacuum, and our logic model would be strengthened further by empirical research that better explores the interplay between the political and mass media campaigns agenda setting functions. Such insights would aim to explore the opportunities and challenges encountered in attempting to explore causal pathways and disentangling the effects of campaign activities from external influences – including political influences. Such research would develop better understandings of the complexity of mass media campaigns in the process of health improvement. McCoy and Hargie echo this when referring to the prerequisite of effective evaluation as the deep understanding of its “nature, purposes and concepts” (p.317).¹⁷⁸ Mass media campaigns can, if developed in a strategic way and informed by principles and theories of effective communication, be successful in conveying health messages to large sections of the population at a relatively low cost and as such are a useful tool to promote health. However, it is imperative to invest in research that develops a strong evidence base for understanding what works and in what context in order to maximise the effectiveness of mass media interventions.

The original logic model we developed (Figure 1) did not adequately reflect the body of literature we found from the review of systematic reviews. The outcomes we identified at the outset were not discussed as proximal, intermediate or distal in the papers, which tended to refer to them as outcomes without distinguishing between them. In some ways this is understandable since behaviour change is rarely a linear affair, as many behaviour change theories suggest a more iterative process. Therefore we conclude that whilst the terms ‘proximal, intermediate and distal’ were not useful labels in the data extraction tool,

they may be useful in thinking through how to better identify the evaluation outcomes of an intervention.

Strengths and limitations of the study

Strengths

This review adds value to the current literature on mass media interventions by bringing together a large amount of evidence for a variety of health topics and enabled a comparison between them. It combined the breadth that is offered when looking across review level evidence with the depth obtainable from examining individual primary studies. In response to frequent calls for in-depth analysis of how campaigns work (e.g. Cassidy *et al.*),¹⁷⁹ it examined intervention characteristics that are associated with effectiveness. The review has particular relevance to the UK context, and we sought feedback from stakeholders to assess its usefulness.

Methodological limitations

We were unable to conduct statistical synthesis due to the considerable heterogeneity across the studies. This makes it difficult to draw firm explanatory conclusions about the causes of the variability in results, noted by Ferri *et al.* among others.⁶² In the review of reviews, some of the primary studies were published in the 1980s and 1990s and thus were discussing technologies that are no longer relevant in 2017. The searches for Review A, the review of reviews, were conducted in January 2016. Searches for the subsequent reviews were conducted later (up to January 2017 for Review C), reflecting the sequential nature of the project. While offering a breadth that would have been unachievable if only primary studies had been examined, the focus on reviews meant that, at times, we lacked contextual and intervention details, and there may have been some overlap in studies between reviews. It was difficult to assess bias within the existing reviews since this would have entailed redoing their analyses. Inevitably our results are limited by the quality of the primary studies, and reflect a publication bias where weaker campaigns are rarely

evaluated, and interventions with poor results are less likely to be written up and published.¹⁶⁶

As noted above, there are a number of issues involved in assessing the cost-effectiveness of mass media campaigns. Data are generally limited, with few studies; this is the case even regarding tobacco use, the health topic which tends to be most frequently examined in mass media studies and reviews. Part of the reason for the lack of studies is likely to be the challenges associated with extrapolating short-term effects (e.g. increase in quit attempts) to long term costs and outcomes, which requires expertise in mathematical modelling. The evidence is also likely to be biased, with ineffective evaluations being unlikely to undergo economic evaluation, thereby running the risk that the intervention under examination is likely to look more cost-effective than it is on average. Finally, approaches to the synthesis of economic evidence are still being developed. Cost effectiveness analyses, in particular, are very context-specific, and it is challenging to conduct systematic reviews of such studies whilst maintaining global relevance.

Limitations in scope/definitions of our study

Although the study was wide-ranging, necessary parameters in terms of scope and how mass media campaigns were defined meant that there were inevitable gaps in the evidence we could review. We focused on six topics relating to preventable risk factors for disease: alcohol use, diet, illicit substance use, physical activity, sexual and reproductive health, and smoking. The focus on disease prevention meant that campaigns addressing related behaviours but with a different focus were excluded: we did not include alcohol campaigns whose main focus was drink-driving. Mass media campaigns seeking to raise awareness, counter stigma and encourage help-seeking behaviour in relation to mental health issues were excluded, as were road safety campaigns (for example, targeting speeding or seatbelt use) and campaigns encouraging skin cancer protection behaviours. Mass media campaigns whose primary aim was to encourage participation in screening programmes were excluded, although campaigns which sought to encourage screening in addition to more lasting behaviour change – such as campaigns which encouraged condom use and HIV/AIDS testing – were included because of the behaviour component. Because of our focus on population

behaviour change, we excluded evidence relating to the use of the media in a media advocacy context, where news media coverage and other forms of media messages are used to foster public and policymaker support for policies or legislation to promote health, such as changes in taxation, drink driving laws or restrictions on marketing activity.¹⁸⁰⁻¹⁸² Previous research has suggested that media coverage achieved as part of a multi-faceted advocacy campaign can be one of the factors leading to successful policy change, although the challenges of demonstrating the particular contribution of media to the outcomes are considerable.¹⁸³

We defined mass media campaigns as *“the intentional use of any media channel(s) of communication by local, regional and national organisations to influence lifestyle behaviour through largely passive or incidental exposure to media campaigns, rather than largely dependent on active help-seeking”* (adapted from Wakefield *et al.* and Bala *et al.*).^{6,27} We adopted this definition of mass media as it is potentially the most useful for campaign planners seeking an estimate of the effectiveness of campaigns implemented in naturalistic settings which do not require active audience engagement with a given channel to achieve message exposure.¹⁶⁴ However, this meant that certain types of communications-based intervention were excluded. Interventions which require individuals actively to seek out the information (such as websites) or to opt-in or sign up (such as SMS/text messaging for smokers trying to quit) would have been excluded because they require active engagement by target populations. Not including these interventions has limited what the review can say about new/digital/interactive media interventions. However, that missing evidence may be limited in itself. A fairly recent scoping review of how digital media (including visual, electronic and online media) are used in the area of public health found that current public health usage is predominantly the *“outmoded approach of ‘telling and selling’ and cast[s] the recipient in an individual and passive role”* (p.1072), based on 221 systematic reviews published between 2000 and 2013.¹⁸⁴

Large multi-faceted community interventions which included a media element were included only if it was possible to relate effects to the media component of the campaign. For example, a review of interventions which involved a mass media campaign combined with health-related product distribution was included because the outcomes that related

specifically to the mass media were reported and synthesised by the authors.⁶⁹ However, this meant that evidence from reviews such as the Cochrane Library reviews of universal multi-component prevention programs for alcohol misuse and community interventions for preventing smoking,^{100,185} and the 'Change4Life Smart Swaps' intervention study (Wrieden and Levy),¹⁸⁶ was not included in our reviews. We are therefore limited in what we can conclude about the extent to which mass media campaigns can interact with other interventions or services to improve health outcomes, which was one of our original objectives. However, our review of reviews found promising evidence regarding the ability of mass media campaigns to stimulate engagement with other services. We found that overall, media campaigns can prompt calls to telephone quitlines for smoking cessation (although there is only moderate certainty in the strength of this finding). For helping to foster engagement with sexual health clinics or services, there was low certainty evidence that campaigns can increase use of such services.

In examining characteristics of mass media campaigns which may be associated with effectiveness, we focused on campaign components which featured in the 'Activities' box of our logic model. We did not examine mass media campaign 'Inputs', which in our logic model included resources, staff, expertise/skills, technology and materials, although the full economic evaluation reviews in our rapid review of cost effectiveness (Review C) would have taken into account the up-front costs (resources) of mass media campaigns, where information was reported.

Gaps in the evidence and implications for future research

As noted above, the amount of evidence relating to mass media campaigns varies considerably across different health behaviours. The most commonly studied behaviour, as reflected in the number of existing reviews we found which met our criteria, was tobacco use, followed by sexual health and physical activity. Although there were a relatively large number of reviews of sexual health mass media campaigns, many of the studies in these reviews were conducted in non-OECD countries and so had limited relevance to the UK context. Just three reviews for media campaigns on illicit drugs were identified, and no

single review examining the effectiveness of mass media for addressing alcohol use or diet was found, although these behaviours were addressed in reviews examining multiple health behaviours. We partially addressed this latter gap by conducting the first (to our knowledge) review of mass media campaigns on alcohol use, but were unable within the time and resources available to conduct a similar review for mass media campaigns addressing diet. This remains a gap.

In part, the variations in the amount of evidence reflect the amount and nature of activity in each topic area (for example, several major campaigns on smoking cessation and secondhand smoke in the 1990s/2000s; a decline in mass media campaigns on sexual health in the UK after the 1980s/early 1990s). Another contributory factor to the apparent lack of evidence we found in some health behaviour topic areas is that our definition of mass media campaigns would have excluded media activity implemented and evaluated as part of multi-component community interventions such as the Department of Health's Change4Life public health programme. In other words, the gaps in evidence we found in some areas do not necessarily mean that there has been no mass media activity or that this activity has not been evaluated, but rather that sometimes this mass media activity has taken place in the context of wider multi-faceted interventions where the specific contribution of mass media cannot be examined separately. The challenge of disentangling the contribution of mass media elements from the contribution of other intervention elements, in multi-faceted interventions, is recognised elsewhere.^{6,58}

Naugle and Hornik recommend that:

In the future, evaluators should address threats to inference of mass media effects by using unbiased samples, multiple comparison groups across time, levels of exposure, and treatment and control sites, statistical controls and advanced statistical methods, and data triangulation. The written report should reflect the measures taken to mitigate threats to inference. Published evaluations of mass media campaigns should provide detailed information about the campaign, exposure, and the evaluation to permit meta-analyses as the literature base grows.

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Subsequent to starting our reviews of the evidence, we are aware that the evaluation methods for social media and public health mass communication interventions are being appraised as an ongoing registered systematic review.¹⁸⁷

One of our objectives was to assess new or emerging evidence about campaigns employing different types of media, including new media. Overall we found limited evidence regarding such campaigns. The nature of reviews of reviews is such that newer evidence tends not to be included: in our review of reviews published from 2000 to early 2016, Review A, the years covered by the identified reviews ranged from database inception to January 2015, with the most recent reviews including studies up to 2013. The review of UK primary studies published between 2011 and 2016 (Review D) included some more recent evidence relating to interventions using newer media, but this was limited. In part, the limited evidence we found regarding campaigns using newer media reflected our definition of mass media campaigns as those involving incidental exposure, which as noted above would have excluded interventions which required individuals to engage in active information-seeking or to opt-in to campaign participation (eg. joining the Smokefree Facebook community or downloading the Public Health England Drinking Days Off app). Reviews in this area have suggested that new digital media have the potential to be “user controlled and shareable”, crucial elements for reaching a large population while at the same time providing interpersonal support to heighten the effects of public health campaigns;^{188,189} and Clar and colleagues’ scoping review of reviews showed that all six of our health topics are targets of digital media for public health.¹⁸⁴ A review of ten studies that evaluated the impact of new digital media interventions on adolescents’ sexual health found changes in socio-cognitive outcomes (although not always in a positive direction), and two interventions showed a reduced risk of sexual initiation among young teenagers.¹⁸⁸

The ‘user controlled and shareable’ aspects of new/digital media interventions mean that they are not standardised products, and this poses challenges for evaluation. McGloin and Eslami note that “although web-based, social-media-based and mobile-based studies tend to show positive results for dietary behaviour change, methodologies have yet to be developed that go beyond basic evaluation criteria and move towards true measures of

behaviour change” (p.145).¹⁹⁰ Guse and colleagues suggest that evaluations using RCTs “can be laborious, with timelines that are inconsistent with the paces of technology and youth culture” (p.542).¹⁸⁸ More research which tests new/social media interventions using rigorous methods, and which compares them to interventions using more traditional media (eg. Jane *et al.*),¹⁹¹ is needed and we note that research into reviewing the evaluation methods for social media interventions is ongoing.¹⁸⁷

Another original objective of our study was to examine the relationship between local, regional and national campaigns and evidence of effectiveness where this exists. Although the reviews included in the review of reviews sometimes noted at what scale included interventions had been implemented – ie. local, regional or national scale – none of the reviews compared or reflected on scale as a potential moderator of campaign effectiveness. There was similarly no evidence on scale of a campaign as a moderator of effectiveness in the UK primary studies review. However, it is interesting to note that the UK primary studies review included studies at both ends of the spectrum, ranging from national whole population television campaigns on smoking to highly localised poster campaigns promoting stair use in a specific area or building. Future research could explore the potential relationship between scale of campaign and type of health behaviour change in more detail – for example, is physical activity more effectively promoted with a highly localised campaign, focusing on physical activity in a particular location, or with a national campaign focusing on physical activity in general? Could highly localised campaigns be used to promote other types of health behaviour than physical activity? For commissioners of campaigns interested in how local/regional and national campaigns can be designed to work synergistically, it may be useful to examine process and other evaluations of campaigns which are designed to be implemented at both national and local/regional level, such as National No Smoking Day or Dry January.

Chapter 8: Conclusion

This study provides a new synthesis of existing research on the use of mass media to communicate public health messages. Informed by a logic model, the study involved a review of evidence on the effectiveness of mass media campaigns across six health topics which represent the main preventable risk factors for disease morbidity and mortality in developed countries¹⁵: alcohol use, diet, illicit substance use, physical activity, sexual and reproductive health, and tobacco use.

First we conducted a review of systematic reviews (Review A). This was informative and provided a high-level overview of what is known on this topic, including identification of gaps in the evidence. We found no systematic reviews of mass media campaigns specifically addressing alcohol use that met our inclusion criteria, and thus we conducted our own original review on this topic (Review B). The overall study also aimed to examine the cost-effectiveness of mass media campaigns for the six health topics of interest, and this was addressed in a third review (Review C). The final element of our study involved a systematic review of English-language primary studies of mass media campaigns targeting the same six health topics, conducted recently in the UK (Review D). This was conducted to provide additional evidence on campaign characteristics which might be associated with effectiveness which was directly relevant to the current or recent UK context.

Our review of reviews also found no systematic reviews of the effectiveness of mass media campaigns to improve or modify diet. We conducted a scoping search for this which resulted in over 16,500 references being identified in Medline. Within this study we did not have the available time or resources to conduct a full, new systematic review on this topic.

Our study had a number of limitations as described in Chapter 7. However, key messages and priorities for future research emerge.

Key findings

First, logic models provide a useful basis for planning and conducting systematic reviews on complex topics such as mass media for public health messages. Our model proved essential in helping us develop the scope and focus of our reviews, in partnership with stakeholders, and was refined as the study progressed. We hope our logic model will prove useful to others studying this topic or indeed those designing campaigns and considering what issues to assess or measure in any evaluation.

In addition, a number of systematic reviews of mass media campaigns have been conducted but there is significantly more literature on tobacco control mass media campaigns than those focusing on other topics, although campaigns on sexual health and physical activity have been evaluated in a number of studies and these findings brought together in reviews. Looking across reviews, the strength of the evidence varies. The impact of the mass media on tobacco use and physical activity is mixed, based on the available literature. There is moderate evidence for the positive effects of mass media campaigns on reducing sedentary behaviour and sexual health. Review level evidence was of low certainty for the impact of campaigns on illicit drugs.

Mass media campaigns can prompt people to contact or access services (treatment seeking). There is evidence that tobacco control mass media campaigns can prompt people to call smoking quitlines and some, but more limited, evidence that mass media campaigns can help increase the use of sexual health clinics or services.

Mass media campaigns on alcohol have been evaluated to a modest degree in the literature. Campaigns can be memorable and can influence knowledge, attitudes and beliefs about drinking, but there is limited evidence that these campaigns can help reduce alcohol consumption.

There is moderate evidence that tobacco control mass media campaigns can be cost-effective. We found almost no data on the cost-effectiveness of mass media campaigns for other health behaviours, and this requires further research.

How effective a mass media campaign is may depend on its characteristics, and we examined this in both Review A and Review D. Campaigns that run for longer and are more intensive (with people exposed to them more often, for example) are likely to be more effective, based on evidence from tobacco and sexual health campaigns in particular.

Targeting a campaign at different audiences (such as young people) can be effective. Targeted campaigns need to be designed and tested to be appropriate to the target audience taking into account the age, gender, culture and level of engagement in the behaviour of interest.

The messages featured in a campaign may also make a difference. We found some evidence in Review A that those focusing on 'hard hitting' (negative) messages, for example, or on shifting social norms, may change behaviour, while the UK studies in Review D found evidence that campaigns with both positive and negative messages may affect smoking behaviour. However, few direct comparisons of different message were identified and we also found gaps relating to: the use of theory; the type of media channel used; and the scale of a campaign (national, regional or local).

Future Research

Our study identifies clear priorities for future research. These include the need for a systematic review of mass media campaigns on diet. Evaluations of mass media campaigns need to be rigorous and to include detailed information on the campaign itself, and on target population exposure. In addition, more information is required on the cost-effectiveness of mass media campaigns for public health messages, particularly on topics other than tobacco. Researchers should aim to include cost data and ideally assess cost-effectiveness in future studies. We identified some findings on new media (see Chapter 5) but the data were mixed and it was difficult to offer firm conclusions in this area, at least partially because of the time lag between campaigns being run and evaluations being conducted and published.

More studies and reviews on the effectiveness of new media (including digital and social media) campaigns are needed. In addition, and although very difficult to achieve, a separate study could be commissioned to examine the specific contribution of mass media campaigns when delivered as part of multi-component community interventions. In reality, mass media campaigns do not exist in isolation but are often designed to complement other public health programmes or interventions, but unpicking their 'independent' effect in this context may be very difficult in practice. Finally, a better understanding of how local, regional or national campaigns can work together is needed to inform commissioning decisions, particularly in a UK context.

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Contributions of authors

All authors contributed to the interpretation of findings, writing and editing of the final report, and outputs from the study. More specifically:

Ms Martine Stead (Deputy Director, Institute for Social Marketing) contributed to the original grant application, was responsible for day to day coordination of project elements, conducted data appraisal, conducted review and synthesis for Chapters 2 and 5 and prepared results for publication, drafted Chapter 7, devised the overall report structure and contributed to report editing.

Ms Kathryn Angus (Information Specialist, Public Health) conducted searches, data extraction and appraisal, made a substantial contribution to synthesis and write-up. She contributed to structuring and coordinating the final report and managing the referencing for the final report.

Dr Tessa Langley (Associate Professor in Health Economics) contributed to the original grant application, supported the management of research staff, conducted data extraction and appraisal, made a substantial contribution of synthesis and write-up, commented on drafts and facilitated stakeholder engagement events.

Dr S. Vittal Katikireddi (Senior Clinical Research Fellow) contributed to the original grant application, supported the management of research staff, conducted data extraction and appraisal, made a substantial contribution to synthesis and write-up, commented on drafts and helped facilitate public engagement activities.

Ms Kate Hinds (Systematic Reviewer) conducted searches, screened records, developed data extraction tools, data extracted and quality appraised the papers as well as contributing to the methods and the characteristics chapters in the report.

Dr Shona Hilton (Deputy Director, MRC/CSO Social and Public Health Sciences Unit) contributed to the original grant application; conducted data extraction and appraisal and provided a substantial contribution to synthesis and write-up of the report, Chapter 7 on Characteristics in particular.

Professor Sarah Lewis (Professor of Medical Statistics) contributed to study design, data extraction and analysis of subgroup effects on main outcomes, impact of message type, and co-supervision of alcohol mass media review.

Professor James Thomas (Professor of Social Research & Policy) contributed to: original grant application; co-ordination and team management; development of tools and methods; and writing the final report.

Ms Mhairi Campbell (Systematic Reviewer, Public Health) contributed to literature search of diet studies, conducted quality appraisal, data extraction, and synthesis of behavioural outcomes for the review of reviews, and prepared the results for publication.

Mr Ben Young (Research Assistant, Health Psychology) carried out data extraction, quality assessment, and conducted the systematic review of alcohol primary studies.

Professor Linda Bauld (Professor, Health Policy) was the PI with overall responsibility for the design, co-ordination and delivery of the study, and liaising with NIHR. With coinvestigators, she conceived, designed and led the original grant application. She made substantial contribution to synthesis and write-up of chapters in the report, commented on drafts and outputs of the study, and facilitated stakeholder and public engagement activities.

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Data sharing statement

All data requests should be submitted to the corresponding author for consideration. Access to available anonymised data may be granted following review.

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171. Marsh K, Dolan P, Kempster J, Lugon M. Prioritizing investments in public health: a multi-criteria decision analysis. *J Public Health (Oxf)* 2013;**35**(3):460-6. <https://doi.org/10.1093/pubmed/fds099>.
172. Mosdøl A, Lidal I, Straumann G, Vist G. *Targeted mass media interventions promoting healthy behaviours to reduce risk of non-communicable diseases in adult, ethnic minorities [Cochrane Protocol]. PROSPERO 2015: CRD42015026560.* 2015. URL: http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42015026560 (accessed 27 September 2017).
173. Committee on Communications, American Academy of Pediatrics, Strasburger VC. Children, adolescents, and advertising. *Pediatrics* 2006;**118**(6):2563-9. <https://doi.org/10.1542/peds.2006-2698>.
174. Norman J, Kelly B, Boyland E, McMahon A. The impact of marketing and advertising on food behaviours: evaluating the evidence for a causal relationship. *Current Nutrition Reports* 2016;**5**(3):139-49. <https://doi.org/10.1007/s13668-016-0166-6>.
175. Lankford T, Wallace J, Brown D, Soares J, Epping JN, Fridinger F. Analysis of physical activity mass media campaign design. *J Phys Act Health* 2014;**11**(6):1065-9. <https://doi.org/10.1123/jpah.2012-0303>.
176. Allen JA, Duke JC, Davis KC, Kim AE, Nonnemaker JM, Farrelly MC. Using mass media campaigns to reduce youth tobacco use: a review. *Am J Health Promot* 2015;**30**(2):e71-82. <https://doi.org/10.4278/ajhp.130510-LIT-237>.
177. Carson-Chahhoud KV, Ameer F, Sayehmiri K, Hnin K, van Agteren JE, Sayehmiri F, *et al.* Mass media interventions for preventing smoking in young people. *Cochrane Database Syst Rev* 2017;**6**:CD001006. <https://doi.org/10.1002/14651858.CD001006.pub3>.
178. McCoy M, Hargie OD. Evaluating evaluation: implications for assessing quality. *Int J Health Care Qual Assur Inc Leadersh Health Serv* 2001;**14**(6-7):317-27. <https://doi.org/10.1108/09526860110409081>.
179. Cassidy T, Bowman B, McGrath C, Matzopoulos R. Brief report on a systematic review of youth violence prevention through media campaigns: Does the limited yield of strong evidence imply methodological challenges or absence of effect? *J Adolesc* 2016;**52**:22-6. <https://doi.org/10.1016/j.adolescence.2016.07.002>.
180. Chapman S, Lupton D. *The Fight for Public Health: Principles and Practice of Media Advocacy.* London: BMJ Publishing; 1994.
181. Treno AJ, Breed L, Holder HD, Roeper P, Thomas BA, Gruenewald PJ. Evaluation of media advocacy efforts within a community trial to reduce alcohol-involved injury. Preliminary newspaper results. *Eval Rev* 1996;**20**(4):404-23. <https://doi.org/10.1177/0193841X9602000403>.
182. Wallack L, Dorfman L, Jernigan D, Themba M. *Media Advocacy and Public Health: Power for Prevention.* Thousand Oaks, CA: SAGE; 1993.

183. Stead M, Hastings G, Eadie D. The challenge of evaluating complex interventions: a framework for evaluating media advocacy. *Health Educ Res* 2002;**17**(3):351-64. <https://doi.org/10.1093/her/17.3.351>.
184. Clar C, Dyakova M, Curtis K, Dawson C, Donnelly P, Knifton L, *et al*. Just telling and selling: current limitations in the use of digital media in public health: a scoping review. *Public Health* 2014;**128**(12):1066-75. <https://doi.org/10.1016/j.puhe.2014.09.009>.
185. Carson KV, Brinn MP, Labiszewski NA, Esterman AJ, Chang AB, Smith BJ. Community interventions for preventing smoking in young people. *Cochrane Database Syst Rev* 2011;(7):CD001291. <https://doi.org/10.1002/14651858.CD001291.pub2>.
186. Wrieden WL, Levy LB. 'Change4Life Smart Swaps': quasi-experimental evaluation of a natural experiment. *Public Health Nutr* 2016;**19**(13):2388-92. <https://doi.org/10.1017/S1368980016000513>.
187. O'Kane N, Gough A, Hunter R, McKinley M. *Social media and public health mass communication interventions: a systematic review of evaluation methods*. PROSPERO 2016:CRD42016049280. 2016. URL: http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016049280 (accessed 27 September 2017).
188. Guse K, Levine D, Martins S, Lira A, Gaarde J, Westmorland W, *et al*. Interventions Using New Digital Media to Improve Adolescent Sexual Health: A Systematic Review. *J Adolesc Health* 2012;**51**(6):535-43. <https://doi.org/10.1016/j.jadohealth.2012.03.014>.
189. Cugelman B, Thelwall M, Dawes P. Online Interventions for Social Marketing Health Behavior Change Campaigns: A Meta-Analysis of Psychological Architectures and Adherence Factors. *J Med Internet Res* 2011;**13**(1):e17. <http://doi.org/10.2196/jmir.1367>.
190. McGloin AF, Eslami S. Digital and social media opportunities for dietary behaviour change. *Proc Nutr Soc* 2015;**74**(2):139-48. <https://doi.org/10.1017/S0029665114001505>.
191. Jane M, Foster J, Hagger M, Pal S. Using new technologies to promote weight management: a randomised controlled trial study protocol. *BMC Public Health* 2015;**15**:509,015-1849-4. <https://doi.org/10.1186/s12889-015-1849-4>.

Appendix 1 Review of reviews example search strategy (Review A)

Cumulative Index to Nursing and Allied Health Literature (CINAHL)

Searched via EBSCOhost interface on 5 January 2016.

AB "systematic review" OR TI meta-analysis OR AB meta-analysis OR TX meta-analy* OR TI "systematic literature review" OR AB "systematic literature review" OR TI "meta-synthesis" OR AB "meta-synthesis" OR AB "integrative review" OR AB "integrative research review" OR AB "rapid review" OR TI "evidence based" OR AB "evidence based" OR TX "exclusion criteri*" OR research synthesis OR "narrative synthesis OR narrative review" OR "critical interpretive synthesis" OR "rapid review" OR "scoping review" OR "evidence synthesis" OR "research synthesis" OR "evidence review"

TI media OR AB media OR TI "mass communication" OR AB "mass communication" OR TI "social marketing" OR AB "social marketing" OR TI broadcast* OR AB broadcast* OR (MH "Communications Media") OR (MH "Social Media") OR "media" OR health campaigns

Appendix 2 List of reviews excluded from the systematic review of reviews (Review A) at the full text assessment stage

Adeigbe RT, Baldwin S, Gallion K, Grier S, and Ramirez AG. 2015. "Food and Beverage Marketing to Latinos: A Systematic Literature Review." <i>Health education & behavior : the official publication of the Society for Public Health Education</i> 42(5):569-82.	Did not include interventions that met the definition of a mass media intervention*
Afshin A, Abioye A I, Ajala O N, Nguyen A B, See K C, and Mozaffarian D. 2013. "Abstracts From the American Heart Association's Epidemiology and Prevention/Physical Activity, Nutrition and Metabolism 2013 Scientific Sessions: Abstract P087: Effectiveness of Mass Media Campaigns for Improving Dietary Behaviors: A Systematic Review and Meta-analysis". <i>Circulation</i> 127(Suppl 12):AP087.	A dual publication or the review has since been updated
Agostinelli G, and Grube JW. 2002. "Alcohol counter-advertising and the media - A review of recent research". <i>Alcohol Research & Health</i> 26(1):15-21.	Did not meet the definition of a systematic review†
Akers AY, Holland CL, and Bost J. 2011. "Interventions to improve parental communication about sex: a systematic review." <i>Pediatrics</i> 127(3):494-510.	Did not examine one or more of the relevant health behaviours
Allara E, Ferri M, Bo A, Gasparrini A, and Faggiano F. 2015. "Are mass-media campaigns effective in preventing drug use? A Cochrane systematic review and meta-analysis". <i>BMJ Open</i> 5:no pagination.	A dual publication or the review has since been updated
Allen JA, Duke JC, Davis KC, Kim AE, Nonnemaker JM, and Farrelly MC. 2015. "Using Mass Media Campaigns to Reduce Youth Tobacco Use: A Review." <i>American journal of health promotion : AJHP</i> 30(2):e71-82.	Did not meet the definition of a systematic review†
Anonymous . 2010. "Population-based smoking cessation strategies: A summary of a select group of evidence-based reviews". <i>Ontario Health Technology Assessment Series</i> 10:no pagination.	Did not meet the definition of a systematic review†
Arora Monika, Mathur Manu Raj, and Singh Neha. 2013. "A Framework to Prevent and Control Tobacco among Adolescents and Children: Introducing the IMPACT Model". <i>Indian Journal of Pediatrics</i> 80:55-62 8p.	Did not meet the definition of a systematic review†
Azagba Sunday, Burhoo Premduth, Chaloupka Frank J, and Fong Geoffrey T. 2015. "Effect of cigarette tax increase in combination with mass media campaign on smoking behaviour in Mauritius: findings from the ITC Mauritius Survey". <i>Tobacco Control</i> 24:71-75 5p.	Did not meet the definition of a systematic review†
Backholer K, Magliano D, and Peeters A. 2014. "The effect of obesity prevention interventions according to socioeconomic position: A systematic review Beauchamp A". <i>Obesity Reviews</i> 15:541-554.	Did not include interventions that met the definition of a mass media intervention*
Backinger CL, Fagan P, Matthews E, and Grana R. 2003. "Adolescent and young adult tobacco prevention and cessation: current status and future directions." <i>Tobacco control</i> 12 Suppl 4:IV46-53.	Did not meet the definition of a systematic review†
Baker PR, Francis DP, Soares J, Weightman AL, and Foster C. 2015. "Community wide interventions for increasing physical activity." <i>The Cochrane database of systematic reviews</i> 1:CD008366.	Did not include interventions that met the definition of a mass media intervention*
Balatsoukas Panos, Kennedy Catriona M, Buchan Iain, Powell John, and Ainsworth John. 2015. "The Role of Social Network Technologies in Online Health Promotion: A Narrative Review of Theoretical and Empirical Factors Influencing Intervention Effectiveness". <i>Journal of Medical Internet Research</i> 17:e141-e141 1p.	Did not include interventions that met the definition of a mass media intervention*
Bam Kiran, and Girase Bhusan. 2015. "Scenario of Adolescent Sexual and Reproductive Health with Opportunities for Information Communication and Technology Use in Selected South Asian Countries". <i>Health Science Journal</i> 9:1-7 7p.	Excluded on outcomes data

Bardus M, Smith JR, Samaha L, and Abraham C. 2015. "Mobile Phone and Web 2.0 Technologies for Weight Management: A Systematic Scoping Review.". <i>Journal of medical Internet research</i> 17(11):e259.	Excluded on outcomes data
Bauman A, and Chau J. 2009. "The role of media in promoting physical activity.". <i>Journal of physical activity & health</i> 6 Suppl 2:S196-210.	Did not meet the definition of a systematic review [†]
Beauchamp A, Backholer K, Magliano D, and Peeters A. 2013. "The effect of obesity prevention interventions according to socioeconomic position: A systematic review". <i>Obesity Research and Clinical Practice</i> 7:e48.	Excluded on outcomes data
Bélanger-Gravel Ariane, Godin Gaston, and Amireault Steve. 2013. "A meta-analytic review of the effect of implementation intentions on physical activity". <i>Health Psychology Review</i> 7(1):23-54.	Excluded on outcomes data
Berg Rigmor C, and Denison Eva. 2012. "Interventions to reduce the prevalence of female genital mutilation/cutting in African countries". : .	Excluded on outcomes data
Bertrand Jane T, O'Reilly Kevin, Denison Julie, Anhang Rebecca, and Sweat Michael. 2006. "Systematic review of the effectiveness of mass communication programs to change HIV/AIDS-related behaviors in developing countries". <i>Health Education Research</i> 21:567-597.	A dual publication or the review has since been updated
Bessell T L, McDonald S, Silagy C A, Anderson J N, Hiller J E, and Sansom L N. 2002. "Do Internet interventions for consumers cause more harm than good: a systematic review.". <i>Health Expectations</i> 5(1):28-37.	Did not include interventions that met the definition of a mass media intervention [*]
Biddle Stuart J. H, Petrolini Irene, and Pearson Natalie. 2014. "Interventions designed to reduce sedentary behaviours in young people: a review of reviews". <i>British Journal of Sports Medicine</i> 48:182-186 5p.	Did not meet the definition of a systematic review [†]
Blanchette L, and Brug J. 2005. "Determinants of fruit and vegetable consumption among 6-12-year-old children and effective interventions to increase consumption". <i>Journal of human nutrition and dietetics : the official journal of the British Dietetic Association</i> 18:431-43.	Did not include interventions that met the definition of a mass media intervention [*]
Brusse Carl, Gardner Karen, McAullay Daniel, and Dowden Michelle. 2014. "Social media and mobile apps for health promotion in Australian Indigenous populations: scoping review". <i>Journal of Medical Internet Research</i> 16:e280-e280 1p.	Did not meet the definition of a systematic review [†]
Carins JE, and Rundle-Thiele SR. 2014. "Eating for the better: a social marketing review (2000-2012)". <i>Public health nutrition</i> 17(7):1628-39.	Excluded on outcomes data
Carson Kristin V, Brinn Malcolm P, Labiszewski Nadina A, Esterman Adrian J, Chang Anne B, and Smith Brian J. 2011. "Community interventions for preventing smoking in young people". <i>Cochrane Database of Systematic Reviews</i> (7):.	Did not include interventions that met the definition of a mass media intervention [*]
Carson KV, Brinn MP, Labiszewski NA, Peters M, Chang AB, Veale A, Esterman AJ, and Smith BJ. 2012. "Interventions for tobacco use prevention in Indigenous youth.". <i>The Cochrane database of systematic reviews</i> 8:CD009325.	Did not include interventions that met the definition of a mass media intervention [*]
Cavill Jamie-Lee, Jancey Jonine Maree, and Howat Peter. 2012. "Review and recommendations for online physical activity and nutrition programmes targeted at over 40s REVIEW EFFECTS". <i>Global Health Promotion</i> 19(2):44-53.	Did not include interventions that met the definition of a mass media intervention [*]
Cavill N, and Bauman A. 2004. "Changing the way people think about health-enhancing physical activity: do mass media campaigns have a role? ". <i>J Sports Sci</i> 22(8):771-790.	Did not meet the definition of a systematic review [†]
Centers for Disease Control and Prevention. 2001. "Increasing physical activity. A report on recommendations of the Task Force on Community Preventive Services.". <i>MMWR. Recommendations and reports : Morbidity and mortality weekly report. Recommendations and reports / Centers for Disease Control</i> 50(RR-18):1-14.	A dual publication or the review has since been updated
Chambers Stephanie A, Freeman Ruth, Anderson Annie S, and MacGillivray Steve. 2015. "Reducing the volume, exposure and negative impacts of advertising for foods high in fat, sugar and salt to children: A systematic	Did not include interventions that met the definition of a mass media intervention [*]

review of the evidence from statutory and self-regulatory actions and educational measures". <i>Preventive Medicine</i> 75:32-43.	
Chang T, Chopra V, Zhang C, and Woolford SJ. 2013. "The role of social media in online weight management: systematic review.". <i>Journal of medical Internet research</i> 15(11):e262.	Did not include interventions that met the definition of a mass media intervention*
Chavez Noe R, Shearer Lee S, and Rosenthal Susan L. 2013. "USE OF DIGITAL MEDIA TECHNOLOGY FOR PRIMARY PREVENTION OF STIS/HIV IN ADOLESCENTS AND YOUNG ADULTS: A SYSTEMATIC REVIEW OF THE LITERATURE". <i>Journal of Adolescent Health</i> 52:S84-S85.	Did not meet the definition of a systematic review†
Chou Wen-ying Sylvia, Prestin Abby, Lyons Claire, and Wen Kuang-yi. 2013. "Web 2.0 for health promotion: reviewing the current evidence". <i>American journal of public health</i> 103:e9-18.	Did not include interventions that met the definition of a mass media intervention*
Clar C, Dyakova M, Curtis K, Dawson C, Donnelly P, Knifton L, and Clarke A. 2014. "Just telling and selling: current limitations in the use of digital media in public health A scoping review". <i>Public Health (Elsevier)</i> 128:1066-1075 10p.	Did not meet the definition of a systematic review†
Clayforth C, and Pettigrew S Mooney K. Lansdorp-Vogelaar I. Rosenberg M. Slevin. 2014. "A cost-effectiveness analysis of online, radio and print tobacco control advertisements targeting 25-39 year-old males". <i>Australian and New Zealand Journal of Public Health</i> 38(3):270-274.	Did not meet the definition of a systematic review†
Cugelman Brian, Thelwall Mike, and Dawes Phil. 2011. "Online interventions for social marketing health behavior change campaigns: a meta-analysis of psychological architectures and adherence factors". <i>Journal of Medical Internet Research</i> 13:e17-e17 1p.	Excluded by another of the criterion
Dalziel K, and Segal L. 2007. "Time to give nutrition interventions a higher profile: cost-effectiveness of 10 nutrition interventions". <i>Health Promotion International</i> 22(4):271-283.	Did not meet the definition of a systematic review†
De Bruijn , A , Angus K, Gordon R, and Hastings G. 2009. "Special issue: The message and the media: Impact of alcohol advertising and media exposure on adolescent alcohol use: A systematic review of longitudinal studies Anderson P". <i>Alcohol and Alcoholism</i> 44:229-243.	Did not include interventions that met the definition of a mass media intervention*
De Leon E, Fuentes LW, and Cohen JE. 2014. "Characterizing periodic messaging interventions across health behaviors and media: systematic review.". <i>Journal of medical Internet research</i> 16(3):e93.	Excluded on outcomes data
DeJong W. 2002. "The role of mass media campaigns in reducing high-risk drinking among college students". <i>Journal of Studies on Alcohol suppl</i> (14):182-192.	Did not meet the definition of a systematic review†
Ditter S M, Elder R W, Shults R A, Sleet D A, Compton R, and Nichols J L. 2005. "Effectiveness of designated driver programs for reducing alcohol-impaired driving: a systematic review". <i>American Journal of Preventive Medicine</i> 28(5 Supplement):280-287.	Did not examine one or more of the relevant health behaviours
Durkin Sarah, Brennan Emily, and Wakefield Melanie. 2012. "Mass media campaigns to promote smoking cessation among adults: an integrative review". <i>Tobacco control</i> 21:127-38.	Did not meet the definition of a systematic review†
Ekpu VU, and Brown AK. 2015. "The Economic Impact of Smoking and of Reducing Smoking Prevalence: Review of Evidence.". <i>Tobacco use insights</i> 8:1-35.	Did not meet the definition of a systematic review†
Elder JP. 2001. "Preventing smoking in multiethnic communities". <i>American Journal of Health Behavior</i> 25(3):200-205.	Did not meet the definition of a systematic review†
Elder R W, Shults R A, Sleet D A, Nichols J L, Thompson R S, Rajab W, Task Force Community, and Preventive . 2004. "Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes - A systematic review". <i>American Journal of Preventive Medicine</i> 27:57-65.	Did not examine one or more of the relevant health behaviours
Escobar-Chaves SL, Tortolero SR, Markham CM, Low BJ, Eitel P, and Thickstun P. 2005. "Impact of the media on adolescent sexual attitudes and behaviors.". <i>Pediatrics</i> 116(1):303-26.	Did not include interventions that met the definition of a mass media intervention*

Evans WD, Horn KA, and Gray T. 2015. "Systematic Review to Inform Dual Tobacco Use Prevention.". <i>Pediatric clinics of North America</i> 62(5):1159-72.	Excluded on outcomes data
Fjeldsoe Brianna S, Marshall Alison L, and Miller Yvette D. 2009. "Behavior Change Interventions Delivered by Mobile Telephone Short-Message Service". <i>American Journal of Preventive Medicine</i> 36:165-173.	Did not include interventions that met the definition of a mass media intervention*
Flay BR. 2000. "Approaches to substance use prevention utilizing school curriculum plus social environment change". <i>Addictive Behaviors</i> 25(6):861-885.	Did not meet the definition of a systematic review†
Flynn BS, Worden JK, Bunn JY, Solomon LJ, Ashikaga T, Connolly SW, and Ramirez AG. 2010. "Mass media interventions to reduce youth smoking prevalence.". <i>American journal of preventive medicine</i> 39(1):53-62.	Did not meet the definition of a systematic review†
Foxcroft David R, and Tsertsvadze Alexander. 2011. "Universal multi-component prevention programs for alcohol misuse in young people". <i>Cochrane Database of Systematic Reviews</i> (9):.	Did not include interventions that met the definition of a mass media intervention*
Free C, Phillips G, Galli L, Watson L, Felix L, Edwards P, Patel V, and Haines A. 2013. "The effectiveness of mobile-health technology-based health behaviour change or disease management interventions for health care consumers: a systematic review". <i>PLoS medicine</i> 10:e1001362.	Did not include interventions that met the definition of a mass media intervention*
Friend K, and Levy DT. 2002. "Reductions in smoking prevalence and cigarette consumption associated with mass-media campaigns". <i>Health Education Research</i> 17(1):85-98.	Did not meet the definition of a systematic review†
Gavin Loretta E, Williams Jessica R, Rivera Maria I, and Lachance Christina R. 2015. "Programs to Strengthen Parent-Adolescent Communication About Reproductive Health A Systematic Review". <i>American Journal of Preventive Medicine</i> 49:S65-S72.	Did not include interventions that met the definition of a mass media intervention*
Gibbons MC. 2013. "Personal health and consumer informatics. The impact of health oriented social media applications on health outcomes.". <i>Yearbook of medical informatics</i> 8:159-61.	Did not include interventions that met the definition of a mass media intervention*
Gittelsohn Joel, Lee-Kwan Seung Hee, and Batorsky Benjamin. 2013. "Community-Based Interventions in Prepared-Food Sources: A Systematic Review". <i>Preventing Chronic Disease</i> 10:.	Did not include interventions that met the definition of a mass media intervention*
Graham A L, Milner P, Saul J E, and Pfaff L. 2008. "Online advertising as a public health and recruitment tool: comparison of different media campaigns to increase demand for smoking cessation interventions". <i>Journal of Medical Internet Research</i> 10:e50-e50 1p.	Did not meet the definition of a systematic review†
Guse Kylene, Levine Deb, Martins Summer, Lira Andrea, Gaarde Jenna, Westmorland Whitney, and Gilliam Melissa. 2012. "Interventions Using New Digital Media to Improve Adolescent Sexual Health: A Systematic Review". <i>Journal of Adolescent Health</i> 51:535-543.	Excluded on outcomes data
Hackman CL, and Knowlden AP. 2014. "Theory of reasoned action and theory of planned behavior-based dietary interventions in adolescents and young adults: a systematic review.". <i>Adolescent health, and medicine and therapeutics</i> 5:101-14.	Did not include interventions that met the definition of a mass media intervention*
Hamel LM, and Robbins LB. 2013. "Computer- and web-based interventions to promote healthy eating among children and adolescents: a systematic review". <i>Journal of Advanced Nursing</i> 69(1):16-30.	Did not include interventions that met the definition of a mass media intervention*
Hamm MP, Shulhan J, Williams G, Milne A, Scott SD, and Hartling L. 2014. "A systematic review of the use and effectiveness of social media in child health". <i>BMC Pediatrics</i> 14:138.	Did not include interventions that met the definition of a mass media intervention*
Hammond David, Wakefield Melanie, Durkin Sarah, and Brennan Emily. 2013. "Tobacco Packaging and Mass Media Campaigns: Research Needs for Articles 11 and 12 of the WHO Framework Convention on Tobacco Control". <i>Nicotine & Tobacco Research</i> 15:817-831.	Did not meet the definition of a systematic review†
Heath GW, Parra DC, Sarmiento OL, Andersen LB, Owen N, Goenka S, Montes F, and Brownson RC. 2012. "Evidence-based intervention in	Did not meet the definition of a systematic review†

physical activity: lessons from around the world.". <i>Lancet (London, and England)</i> 380(9838):272-81.	
Hieftje K, Edelman EJ, Camenga DR, and Fiellin LE. 2013. "Electronic media-based health interventions promoting behavior change in youth: a systematic review". <i>JAMA Pediatrics</i> 167(6):574-580.	Excluded by another of the criterion
Hoffman SJ, and Tan C. 2015. "Overview of systematic reviews on the health-related effects of government tobacco control policies.". <i>BMC public health</i> 15:744.	Did not meet the definition of a systematic review [†]
Hopkins D P, Briss P A, Ricard C J, Husten C G, Carande-Rulis V G, Fielding J E, Alao M O, McKenna J W, Sharp D J, Harris J R, Woollery T A, Harris K W, Task Force Community, and Preventive . 2001. "Reviews of evidence regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke". <i>American Journal of Preventive Medicine</i> 20:16-66.	Did not meet the definition of a systematic review [†]
Hopson L, Wodarski J, and Tang N. 2015. "The effectiveness of electronic approaches to substance abuse prevention for adolescents.". <i>Journal of evidence-informed social work</i> 12(3):310-22.	Did not include interventions that met the definition of a mass media intervention*
Hou SI, Charlery SA, and Roberson K. 2014. "Systematic literature review of Internet interventions across health behaviors.". <i>Health psychology and behavioral medicine</i> 2(1):455-481.	Did not include interventions that met the definition of a mass media intervention*
Jackson NW, Howes FS, Gupta S, Doyle JL, and Waters E. 2005. "Interventions implemented through sporting organisations for increasing participation in sport.". <i>The Cochrane database of systematic reviews</i> (2):CD004812.	A dual publication or the review has since been updated
Jacob V, Chattopadhyay SK, Elder RW, Robinson MN, Tansil KA, Soler RE, Labre MP, and Mercer SL. 2014. "Economics of mass media health campaigns with health-related product distribution: a community guide systematic review.". <i>American journal of preventive medicine</i> 47(3):348-59.	A dual publication or the review has since been updated
Jacobs MA, Cobb CO, Abrams L, and Graham AL. 2014. "Facebook apps for smoking cessation: a review of content and adherence to evidence-based guidelines.". <i>Journal of medical Internet research</i> 16(9):e205.	Did not meet the definition of a systematic review [†]
Janssen MM, Mathijssen JJ, van Bon-Martens MJ, van Oers HA, and Garretsen HF. 2013. "Effectiveness of alcohol prevention interventions based on the principles of social marketing: a systematic review.". <i>Substance abuse treatment, prevention, and and policy</i> 8:18.	Did not meet the definition of a systematic review [†]
Jenkins Affrica, Christensen Helen, Walker Janine G, and Dear Keith. 2009. "The Effectiveness of Distance Interventions for Increasing Physical Activity: A Review". <i>American Journal of Health Promotion</i> 24:102-117.	Did not include interventions that met the definition of a mass media intervention*
Jepson RG, Harris FM, Platt S, and Tannahill C. 2010. "The effectiveness of interventions to change six health behaviours: a review of reviews.". <i>BMC public health</i> 10:538.	Excluded by another of the criterion
Jones K, Eathington P, Baldwin K, and Sipsma H. 2014. "The impact of health education transmitted via social media or text messaging on adolescent and young adult risky sexual behavior: a systematic review of the literature". <i>Sexually Transmitted Diseases</i> 41(7):413-419.	Did not examine one or more of the relevant health behaviours
Jones L, Bates G, Downing J, Sumnall H, and Bellis MA. 2010. <i>A review of the effectiveness and cost effectiveness of alcohol and sex and relationship education for all children and young people aged 5-19 years in community settings.</i> : Centre for Public Health, Liverpool John Moores University.	Excluded by another of the criterion
Kabir Z, Alpert HR, Goodman PG, Haw S, Behm I, Connolly GN, Gupta PC, and Clancy L. 2010. "Effect of smoke-free home and workplace policies on second-hand smoke exposure levels in children: an evidence summary". <i>Pediatric Health</i> 4(4):391-403.	Did not include interventions that met the definition of a mass media intervention*
Kajula L, and Muhwezi W. 2011. "A review of studies of parent-child communication about sexuality and HIV/AIDS in sub-Saharan Africa Bastien S". <i>Reproductive Health</i> 8:no pagination.	Did not include interventions that met the definition of a mass media intervention*

Kang M, Skinner R, and Usherwood T. 2010. "Interventions for young people in Australia to reduce HIV and sexually transmissible infections: a systematic review.". <i>Sexual health</i> 7(2):107-28.	Did not meet the definition of a systematic review [†]
Kelley M J, and McCrory D C. 2003. "Prevention of lung cancer: summary of published evidence". <i>CHEST</i> 123:50S-9S 1p.	Did not meet the definition of a systematic review [†]
Kelly S A, and Melnyk B M. 2008. "Systematic review of multicomponent interventions with overweight middle adolescents: implications for clinical practice and research". <i>Worldviews on Evidence-Based Nursing</i> 5:113-135 23p.	Did not include interventions that met the definition of a mass media intervention [*]
Kershaw T. 2010. "Text messaging as a tool for behavior change in disease prevention and management Cole-Lewis H". <i>Epidemiologic Reviews</i> 32:56-69.	Excluded by another of the criterion
Kesten JM, Griffiths PL, and Cameron N. 2011. "A systematic review to determine the effectiveness of interventions designed to prevent overweight and obesity in pre-adolescent girls.". <i>Obesity reviews</i> .:	Excluded by another of the criterion
Knai C, Pomerleau J, Lock K, and McKee M. 2006. "Getting children to eat more fruit and vegetables: a systematic review". <i>Preventive Medicine</i> 42(2):85-95.	Did not include interventions that met the definition of a mass media intervention [*]
Kraak Vivica I, Story Mary, and Wartella Ellen A. 2012. "Government and School Progress to Promote a Healthful Diet to American Children and Adolescents A Comprehensive Review of the Available Evidence". <i>American Journal of Preventive Medicine</i> 42:250-262.	Excluded on outcomes data
Laine J, Kuvaja-Kollner V, Pietila E, Koivuneva M, Valtonen H, and Kankaanpaa E. 2014. "Cost-effectiveness of population-level physical activity interventions: a systematic review.". <i>American journal of health promotion : AJHP</i> 29(2):71-80.	Excluded on outcomes data
Laranjo L, Arguel A, Neves AL, Gallagher AM, Kaplan R, Mortimer N, Mendes GA, and Lau AY. 2015. "The influence of social networking sites on health behavior change: a systematic review and meta-analysis.". <i>Journal of the American Medical Informatics Association : JAMIA</i> 22(1):243-56.	Did not include interventions that met the definition of a mass media intervention [*]
Lopez LM, Steiner M, Grimes DA, Hilgenberg D, and Schulz KF. 2013. "Strategies for communicating contraceptive effectiveness.". <i>The Cochrane database of systematic reviews</i> 4:CD006964.	Did not include interventions that met the definition of a mass media intervention [*]
Lorenc T, Marrero-Guillamon I, Aggleton P, Cooper C, Llewellyn A, Lehmann A, and Lindsay C. 2011. "Promoting the uptake of HIV testing among men who have sex with men: systematic review of effectiveness and cost-effectiveness.". <i>Sexually transmitted infections</i> 87(4):272-8.	Did not include interventions that met the definition of a mass media intervention [*]
Macdonald H M. 2007. "Interventions to promote walking: A review". <i>Clinical Journal of Sport Medicine</i> 17(6):516-517.	A dual publication or the review has since been updated
Macfarlane A. 2005. <i>What are the main factors that influence the implementation of disease prevention and health promotion programmes in children and adolescents?.</i> : WHO Regional Office for Europe's Health Evidence Network (HEN).	Did not meet the definition of a systematic review [†]
Magnee T, Burdorf A, Brug J, Kremers SP, Oenema A, van Assema P, Ezendam NP, van Genugten L, Hendriksen IJ, Hopman-Rock M, Jansen W, de Jong J, Kocken PL, Kroeze W, Kwak L, Lechner L, de Nooijer J, van Poppel MN, Robroek SJ, Schreurs H, van Sluijs EM, Steenhuis IJ, van Stralen MM, Tak NI, te Velde SJ, Vermeer WM, Wammes B, van Wier MF, and van Lenthe FJ. 2013. "Equity-specific effects of 26 Dutch obesity-related lifestyle interventions.". <i>American journal of preventive medicine</i> 44(6):e57-66.	Excluded by another of the criterion
Maher Carol A, Lewis Lucy K, Ferrar Katia, Marshall Simon, De Bourdeaudhuij, Ilse, and Vandelanotte Corneel. 2014. "Are health behavior change interventions that use online social networks effective? A systematic review". <i>Journal of medical Internet research</i> 16:e40.	Did not include interventions that met the definition of a mass media intervention [*]

Manhas M, and Kuo MH. 2015. "Information technologies to improve public health: a systematic review.". <i>Studies in health technology and informatics</i> 208:258-63.	Did not examine one or more of the relevant health behaviours
Marlatt GA, and Witkiewitz K. 2002. "Harm reduction approaches to alcohol use: health promotion, prevention, and treatment". <i>Addictive Behaviors</i> 27(6):867-886.	Did not meet the definition of a systematic review [†]
Marshall AL, Owen N, and Bauman AE. 2004. "Mediated approaches for influencing physical activity: update of the evidence on mass media, print, telephone and website delivery of interventions". <i>Journal of Science and Medicine in Sport [J. Sci. Med. Sport]. Vol. 7 7(1):74-80.</i>	Did not meet the definition of a systematic review [†]
Martineau Fred, Tyner Elizabeth, Lorenc Theo, Petticrew Mark, and Lock Karen. 2013. "Population-level interventions to reduce alcohol-related harm: An overview of systematic reviews". <i>Preventive Medicine</i> 57:278-296.	Did not meet the definition of a systematic review [†]
Matthews A K, McCullen C A, and Melvin C L. 2014. "Promotion of tobacco use cessation for lesbian, gay, bisexual, and transgender people: A systematic review Lee J.G.L". <i>American Journal of Preventive Medicine</i> 47:823-831.	Did not meet the definition of a systematic review [†]
McAfee Timothy A. 2007. "Quidines - A tool for research and dissemination of evidence-based cessation practices". <i>American Journal of Preventive Medicine</i> 33:S357-S367.	Did not include interventions that met the definition of a mass media intervention [*]
Momin B, Neri A, McCausland K, Duke J, Hansen H, Kahende J, and Zhang L. 2014. "Traditional and innovative promotional strategies of tobacco cessation services: a review of the literature". <i>Journal of Community Health</i> 39(4):800-809.	Did not meet the definition of a systematic review [†]
Montague Enid, and Perchonok Jennifer. 2012. "Health and wellness technology use by historically underserved health consumers: systematic review". <i>Journal of Medical Internet Research</i> 14:e78-e78 1p.	Excluded by another of the criterion
Montano Diego, Hoven Hanno, and Siegrist Johannes. 2014. "Effects of organisational-level interventions at work on employees' health: a systematic review". <i>Bmc Public Health</i> 14:.	Did not examine one or more of the relevant health behaviours
Montoya ID, Atkinson J, and McFaden WC. 2003. "Best characteristics of adolescent gateway drug prevention programmes". <i>Journal of Addictions Nursing</i> 14:75-83.	Excluded by another of the criterion
Müller Andre, Matthias , and Khoo Selina. 2014. "Non-face-to-face physical activity interventions in older adults: A systematic review". <i>The International Journal of Behavioral Nutrition and Physical Activity</i> 11(35):doi: 10.1186/1479-5868.	Excluded on outcomes data
Naugle DA, and Hornik RC. 2014. "Systematic review of the effectiveness of mass media interventions for child survival in low- and middle-income countries.". <i>Journal of health communication</i> 19 Suppl 1:190-215.	Did not examine one or more of the relevant health behaviours
Neville S, Adams J, and Holdershaw J. 2014. "Social marketing campaigns that promote condom use among MSM: a literature review.". <i>Nursing praxis in New Zealand inc</i> 30(1):5-16.	Did not meet the definition of a systematic review [†]
Nguyen B, Kornman KP, and Baur LA. 2011. "A review of electronic interventions for prevention and treatment of overweight and obesity in young people.". <i>Obesity reviews : an official journal of the International Association for the Study of Obesity</i> 12(5):e298-314.	Did not include interventions that met the definition of a mass media intervention [*]
Niederdeppe J, Kuang X, Crock B, and Skelton A. 2008. "Media campaigns to promote smoking cessation among socioeconomically disadvantaged populations: what do we know, what do we need to learn, and what should we do now?". <i>Social Science & Medicine</i> 67:1343-1355 13p.	Did not meet the definition of a systematic review [†]
Nocon M, Muller-Riemenschneider F, Nitzschke K, and Willich SN. 2010. "Increasing physical activity with point-of-choice prompts: a systematic review". <i>Scandinavian Journal of Public Health</i> 38(6):633-638.	Did not meet the definition of a systematic review [†]

Nour MM, Chen J, and Allman-Farinelli M. 2015. "Efficacy and External Validity of Electronic and Mobile Phone-Based Interventions Promoting Vegetable Intake in Young Adults: A Systematic Review Protocol." <i>JMIR research protocols</i> 4(3):e92.	Did not meet the definition of a systematic review [†]
O'Dea Jennifer. 2005. "School-based health education strategies for the improvement of body image and prevention of eating problems: An overview of safe and successful interventions". <i>Health Education</i> 105:11-33.	Did not include interventions that met the definition of a mass media intervention [*]
O'Reilly K, Denison J, Anhang R, and Sweat M. 2006. "Systematic review of the effectiveness of mass communication programs to change HIV/AIDS-related behaviors in developing countries Bertrand J.T". <i>Health Education Research</i> 21:567-597.	Excluded by another of the criterion
Poorman Elisabeth, Gazmararian Julie, Parker Ruth M, Yang Baiyu, and Elon Lisa. 2015. "Use of Text Messaging for Maternal and Infant Health: A Systematic Review of the Literature". <i>Maternal and Child Health Journal</i> 19:969-989.	Did not meet the definition of a systematic review [†]
Priest Naomi, Armstrong Rebecca, Doyle Jodie, and Waters Elizabeth. 2008. "Interventions implemented through sporting organisations for increasing participation in sport". <i>Cochrane Database of Systematic Reviews</i> (3):.	Excluded on outcomes data
Primack Brian A, Carroll Mary V, McNamara Megan, Klem Mary Lou, King Brandy, Rich Michael, Chan Chun W, and Nayak Smita. 2012. "Role of Video Games in Improving Health-Related Outcomes A Systematic Review". <i>American Journal of Preventive Medicine</i> 42:630-638.	Excluded by another of the criterion
Purcell Kate R, O'Rourke Kerry, and Rivis Maya. 2015. "Tobacco control approaches and inequity-how far have we come and where are we going?". <i>Health Promotion International</i> 30:89-101.	Did not meet the definition of a systematic review [†]
Scher Lauren, Maynard Rebecca A, and Stagner Matthew. 2006. "Interventions Intended to Reduce Pregnancy-Related Outcomes Among Adolescents: A Systematic Review". : .	Did not include interventions that met the definition of a mass media intervention [*]
Shamblen Stephen R, and Derzon James H. 2009. "A Preliminary Study of the Population-Adjusted Effectiveness of Substance Abuse Prevention Programming: Towards Making IOM Program Types Comparable". <i>Journal of Primary Prevention</i> 30:89-107.	Excluded by another of the criterion
Shepherd J, Harden A, Rees R, Brunton G, Garcia J, Oliver S, and Oakley A. 2002. "Young people and healthy eating: a systematic review of research on barriers and facilitators". <i>Health Education Research</i> :165.	Did not include interventions that met the definition of a mass media intervention [*]
Short CE, James EL, Plotnikoff RC, and Girgis A. 2011. "Efficacy of tailored-print interventions to promote physical activity: a systematic review of randomised trials." <i>The international journal of behavioral nutrition and physical activity</i> 8:113.	Did not include interventions that met the definition of a mass media intervention [*]
Shults Ruth A, Elder Randy W, Nichols James L, Sleet David A, Compton Richard, Chattopadhyay Sajal K, Task Force Community, and Preventive . 2009. "Effectiveness of Multicomponent Programs with Community Mobilization for Reducing Alcohol-Impaired Driving". <i>American Journal of Preventive Medicine</i> 37:360-371.	Did not examine one or more of the relevant health behaviours
Silver M Z. 2001. "Efficacy of anti-tobacco mass media campaigns on adolescent tobacco use." <i>Pediatr Nurs</i> . 27(3):293-6.	Did not meet the definition of a systematic review [†]
Snyder L B, Huedo-Medina T B, and Johnson B T. 2014. "Effectiveness of mass media interventions for HIV prevention, 1986-2013: A meta-analysis Lacroix J.M". <i>Journal of Acquired Immune Deficiency Syndromes</i> 66:S329-S340.	Excluded by another of the criterion
Snyder LB, and Hamilton MA. 2002. A meta-analysis of U.S. health campaign effects on behavior: Emphasize enforcement, exposure, and new information, and beware the secular trend. In <i>Public health communication: Evidence for behavior change</i> , edited by Hornik RC, 357-383. Mahwah: Lawrence Erlbaum Associates, Inc.;U Connecticut, CT, US.	Excluded by another of the criterion

Snyder Leslie B, Hamilton Mark A, Mitchell Elizabeth W, Kiwanuka-Tondo James, Fleming-Milici Fran, and Proctor Dwayne. 2004. "A meta-analysis of the effect of mediated health communication campaigns on behavior change in the United States". <i>Journal of health communication</i> 9 Suppl 1:71-96.	Did not meet the definition of a systematic review [†]
Sowden A, and Arblaster L. 2000. "Community interventions for preventing smoking in young people.". <i>The Cochrane database of systematic reviews</i> (2):CD001291.	A dual publication or the review has since been updated
Sowden AJ, and Arblaster L. 2000. "Mass media interventions for preventing smoking in young people.". <i>The Cochrane database of systematic reviews</i> (2):CD001006.	A dual publication or the review has since been updated
Sreevatsava M, Narayan KM, and Cunningham SA. 2013. "Evidence for interventions to prevent and control obesity among children and adolescents: its applicability to India.". <i>Indian journal of pediatrics</i> 80 Suppl 1:S115-22.	Did not meet the definition of a systematic review [†]
Stead M, Gordon R, Angus K, and McDermott L. 2007. "A systematic review of social marketing effectiveness". <i>Health Education</i> 107(1):126-191.	Excluded on outcomes data
Thomas J, Sutcliffe K, Harden A, Oakley A, Oliver S, Rees R, Brunton G, and Kavanagh J. 2003. " <i>Children and healthy eating: a systematic review of barriers and facilitators</i> ". London: EPPI:	Did not include interventions that met the definition of a mass media intervention [*]
Thomas R, and Perera R. 2008. "School-based programmes for preventing smoking". <i>Thomas R, Perera R. School-based programmes for preventing smoking. Cochrane Database of Systematic Reviews: Reviews 2006 Issue 3 John Wiley & Sons, Ltd Chichester, and UK DOI: 10.1002/14651858.CD001293.pub2</i> (4):.	Did not include interventions that met the definition of a mass media intervention [*]
Thomson G, Wilson N, and Howden-Chapman P. 2006. "Population level policy options for increasing the prevalence of smokefree homes". <i>J.Epidemiol.Community Health</i> 60(4):298-304.	Did not meet the definition of a systematic review [†]
Tregear M L, and Moskosky S B. 2015. "Community Education for Family Planning in the U.S.: A Systematic Review Carter M.W". <i>American Journal of Preventive Medicine</i> 49:S107-S115.	Excluded by another of the criterion
Velez LF, Sanitato M, Barry D, Alilio M, Apfel F, Coe G, Garcia A, Kaufman M, Klein J, Kutlesic V, Meadowcroft L, Nilsen W, O'Sullivan G, Peterson S, Raiten D, and Vorkoper S. 2014. "The role of health systems and policy in producing behavior and social change to enhance child survival and development in low- and middle-income countries: an examination of the evidence.". <i>Journal of health communication</i> 19 Suppl 1:89-121.	Did not include interventions that met the definition of a mass media intervention [*]
Vidanapathirana Janaki, Abramson Michael J, Forbes Andrew, and Fairley Christopher. 2005. "Mass media interventions for promoting HIV testing". <i>Cochrane Database of Systematic Reviews</i> (3):.	Did not include interventions that met the definition of a mass media intervention [*]
Villanti Andrea C, McKay Heather S, Abrams David B, Holtgrave David R, and Bowie Janice V. 2010. "Smoking-Cessation Interventions for U.S. Young Adults: A Systematic Review". <i>American Journal of Preventive Medicine</i> 39(6,):564-574.	Did not include interventions that met the definition of a mass media intervention [*]
Vuori I. 2011. "Promoting cycling: a review of interventions.". <i>Clinical journal of sport medicine : official journal of the Canadian Academy of Sport Medicine</i> 21(6):542-4.	A dual publication or the review has since been updated
Wakefield M, and Chaloupka F. 2000. "Effectiveness of comprehensive tobacco control programmes in reducing teenage smoking in the USA.". <i>Tob Control</i> . 9(2):177-86.	Did not meet the definition of a systematic review [†]
Wakhisi AS, Allotey P, Dhillon N, and Reidpath DD. 2011. "The effectiveness of social marketing in reduction of teenage pregnancies: a review of studies in developed countries". <i>Social Marketing Quarterly</i> 17(1):56-90.	Did not include interventions that met the definition of a mass media intervention [*]
Webb OJ, Eves FF, and Kerr J. 2011. "A statistical summary of mall-based stair-climbing interventions.". <i>Journal of physical activity & health</i> 8(4):558-65.	Did not meet the definition of a systematic review [†]

Webb TL, Joseph J, Yardley L, and Michie S. 2010. "Using the internet to promote health behavior change: a systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy." <i>Journal of medical Internet research</i> 12(1):e4.	Did not include interventions that met the definition of a mass media intervention*
Wei Chongyi, Herrick Amy, Raymond H Fisher, Anglemyer Andrew, Gerbase Antonio, and Noar Seth M. 2011. "Social marketing interventions to increase HIV/STI testing uptake among men who have sex with men and male-to-female transgender women". <i>Cochrane Database of Systematic Reviews</i> (9):.	Did not include interventions that met the definition of a mass media intervention*
Williams DM, Matthews CE, Rutt C, Napolitano MA, and Marcus BH. 2008. "Interventions to increase walking behavior". <i>Medicine and Science in Sports and Exercise</i> 40(7 Supplement):S567-S573.	Did not meet the definition of a systematic review†
Williams G, Hamm MP, Shulhan J, Vandermeer B, and Hartling L. 2014. "Social media interventions for diet and exercise behaviours: a systematic review and meta-analysis of randomised controlled trials". <i>BMJ open</i> 4(2):e003926.	Excluded by another of the criterion
Xiao Zhiwen, Noar Seth M, and Zeng Lily. 2014. "Systematic review of HIV prevention interventions in China: a health communication perspective". <i>International Journal of Public Health</i> 59:123-142.	Excluded on outcomes data
Yadav Rajendra-Prasad, and Kobayashi Miwako. 2015. "A systematic review: effectiveness of mass media campaigns for reducing alcohol-impaired driving and alcohol-related crashes". <i>Bmc Public Health</i> 15:.	Did not examine one or more of the relevant health behaviours
Yamada J. 2000. "Review: health education interventions offering information plus sexual negotiation skill development promote increased condom use in women [commentary on Shepherd J, Weston R, Peersman G, et al. Interventions for encouraging sexual lifestyles and". <i>Evidence Based Nursing</i> :16-16 1p.	Excluded by another of the criterion
Yancey AK, Kumanyika SK, Ponce NA, McCarthy WJ, Fielding JE, Leslie JP, and Akbar J. 2004. "Population-based interventions engaging communities of color in healthy eating and active living: a review.". <i>Prev Chronic Dis.</i> 1(1):A09.	Did not meet the definition of a systematic review†
Yang L, Sahlqvist S, McMinn A, Griffin SJ, and Ogilvie D. 2010. "Interventions to promote cycling: systematic review". <i>BMJ</i> :c5293.	Excluded on outcomes data
Yonker Lael M, Zan Shiyi, Scirica Christina V, Jethwani Kamal, and Kinane T Bernard. 2015. "'Friending' teens: systematic review of social media in adolescent and young adult health care". <i>Journal of Medical Internet Research</i> 17:e4-e4 1p.	Excluded on outcomes data
Notes to table: *Definition of a mass media intervention: "the intentional use of any media channel(s) of communication by local, regional and national organisations to influence lifestyle behaviour through largely passive or incidental exposure to media campaigns, rather than largely dependent on active help-seeking" (adapted from Wakefield et al 2010 and Bala et al 2013). This excludes, for example, health campaign websites that individuals actively searched for or signed up for. †Systematic review must include a specified search strategy from more than one database, an assessment of the quality of studies and some kind of synthesis of the primary studies.	

Appendix 3 Summary of the results of the Risk of Bias in Systematic Reviews (ROBIS) assessment (low or high risk of bias) for all inclusions in the review of reviews (Review A)

Review	ROBIS ²⁸ results: Phase 2			Phase 3	
	Study Eligibility Criteria	Identification & Selection of Studies	Data collection & study appraisal	Synthesis & Findings	Risk of bias in the review
Abioye (2013) ⁵⁵	Low	Low	High	Low	Low
Bala (2013) ²⁷	Low	Low	Low	Low	Low
Bertrand (2006) ⁴⁶	Low	Low	Low	High	Low
Brinn (2010) ³⁵	Low	Low	Low	Low	Low
Brown (2012) ⁵⁶	High	High	Low	High	High
Brown (2014a) ³⁷	High	High	Low	High	High
Brown (2014b) ³⁶	High	High	Low	Unclear	High
Byrne (2005) ⁶⁵	Low	Low	High	High	High
Carter (2015) ⁴⁷	Low	Low	Low	Low	Low
de Kleijn (2015) ³⁸	Low	High	Low	High	High
Derzon (2002) ⁶⁶	Low	Low	High	High	High
Ellis (2003) ⁶⁷	Low	Low	Low	Low	Low
Ferri (2013) ⁶²	Low	Low	Low	Low	Low
Finlay (2005) ⁵⁷	High	High	High	High	High
French (2014) ⁴⁸	Low	Low	Low	Low	Low
Gould (2013) ³⁹	Low	Low	Low	Low	Low
Grilli (2000) ⁴⁹	Low	Low	Low	Low	Low
Guillaumier (2012) ⁴⁰	Low	Low	Unclear	Low	Low
Hemsing (2012) ⁴¹	High	Low	Unclear	Low	High
Hill (2014) ⁴²	Low	High	High	Low	High
Jepson (2006) ⁴³	Low	Low	Low	Low	Low
Kahn (2002) ⁵⁸	Low	High	Low	Unclear	High
Kesterton (2010) ⁵⁰	Low	Low	High	High	High
LaCroix (2014) ⁵¹	Low	Low	Low	Low	Low
Leavy (2011) ⁵⁹	Low	High	High	High	High
Matson-Koffman (2005) ⁶⁰	Low	Low	High	Low	Low
Mozaffarian (2012) ⁶⁸	Low	Low	Low	Low	Low
Ogilvie (2007) ⁶¹	Low	Low	Low	Unclear	Low
Richardson (2008) ⁴⁴	Low	Low	Unclear	Low	Low
Robinson (2014) ⁶⁹	Low	Unclear	Low	High	Low
Speizer (2003) ⁵²	Low	High	High	High	High
Swanton (2015) ⁵³	Low	Low	High	Low	Low
Sweat (2012) ⁵⁴	Low	Low	Low	Low	Low
Werb (2011) ⁶³	Low	High	High	High	High
Werb (2013) ⁶⁴	Low	High	Low	Low	Low
Wilson (2012) ⁴⁵	Low	Low	Unclear	Low	Low

Appendix 4 Characteristics of included systematic reviews (Review A)

Table grouped by the reviews' relevance to our review of reviews: high relevance reviews at the top, low relevance below them.

Review	Review's health topic, aims, coverage and theoretical framework (if used)	Date range of included studies (Date range of searches/inclusion criterion)	No. of relevant studies (No. of included studies)	Countries	Types of intervention	Types of population/Target groups	Synthesis: Study design type/Subgroup Analysis	Types of outcomes*
<p>Risk of bias (ROBIS)</p> <p>Relevance to our review of reviews</p>				<ul style="list-style-type: none"> - UK studies - OECD countries - Non-OECD countries 		<p>Range of study sample sizes</p>		<ul style="list-style-type: none"> - Media outcomes - Proximal outcomes - Intermediate outcomes - Distal outcomes
<p>Abioye (2013)⁵⁵</p> <p>Low risk of bias</p> <p>High relevance</p>	<p>Topic: Physical activity</p> <p>Was Mass Media sole focus? Yes</p> <p>Aim of review <i>We searched six electronic databases from their inception to August 2012 and selected prospective studies that evaluated the effect of mass media campaigns on physical activity in adults.</i></p>	<p>Date range of included studies 2001-2008 <i>(campaign years 1996-2005)</i></p> <p>(Date range of searches database inception to August 2012)</p>	<p>Number of studies 9 relevant studies (of 9 included studies)</p>	<p>UK studies: 1</p> <p>OECD countries: <i>US (3), Australia (1), Canada (1), UK (1), New Zealand (1), Netherlands (1), Norway (1)</i></p>	<p>Definition of Mass Media <i>Studies reporting mass media campaigns that were implemented simultaneously with other interventions were also excluded.</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Theoretical framework Basis of programme design <i>prior research, or consultation with</i></p>	<p>Target population Age: <i>Adults - more than or equal to 19 years</i></p> <p>Range of study sample sizes <i>The nine studies enrolled a total of 27,601 participants</i></p>	<p>Type of synthesis Meta-analysis</p> <p>Type(s) of studies synthesised RCTs / Trials <i>before after designs with comparison groups</i> Cohort / Longitudinal study <i>prospective cohort design</i> Pre / Post test</p> <p>Sub-group analysis <i>None reported</i></p>	<p>Media <i>None reported</i></p> <p>Proximal <i>None reported</i></p> <p>Intermediate Behaviour: decreased sedentary behaviour Behaviour: increased brisk walking Behaviour: increased overall physical activity</p> <p>Distal <i>None reported</i></p>

					<p><i>experts</i> Components Duration of the programme <i>used media</i> <i>campaigns that lasted anywhere between 8 weeks to 3 years</i> Dose intensity <i>frequency</i> Some studies objectively reported the intensity of the mass media campaigns using 'gross rating points' or other similar measures [14,19-22]. Coverage/Reach of included campaigns Scope</p> <p>Reach of included campaigns Local Regional National</p>			
<p>Bala (2013)²⁷ Low risk of bias High relevance</p>	<p>Topic: Tobacco use Was Mass Media sole focus? Yes</p>	<p>Date range of included studies 1977-2010 (Date range of searches search range)</p>	<p>Number of studies 11 relevant studies (of 11 included studies)</p>	<p>UK studies: 1 OECD countries: 7 USA, 1 UK, 2 Australia,</p>	<p>Definition of Mass Media <i>Channels of communication such as television, radio, newspapers, billboards, posters, leaflets or booklets</i></p>	<p>Target population Age: 25 years or older. <i>Studies which cover all adults as defined in</i></p>	<p>Type of synthesis Narrative synthesis Type(s) of studies synthesised RCTs / Trials <i>Described as quasi-experimental or</i></p>	<p>Media Awareness Proximal Awareness/knowledge: beliefs or knowledge of</p>

	<p>Aim of review To assess the effectiveness of mass media campaigns (MMCs) in reducing smoking among adults. Four research questions: i). Do MMCs reduce smoking (prevalence, cigarette consumption, quit attempts, quit rates) compared with no intervention in comparison communities? ii) Do MMCs run in conjunction with tobacco control programmes reduce smoking, compared with no intervention or with tobacco control programmes alone? iii) Which study characteristics relate to their efficacy? iv) Do</p>	<p>not reported, searches done in Feb 2013)</p>		<p>1 South Africa</p>	<p>intended to reach large numbers of people and which are not dependent on person-to-person contact. The purpose of the mass media campaign must be primarily to encourage smokers to quit.</p> <p>Characteristics of the mass media interventions collected by the reviewers Theoretical framework Basis of programme design Start date Duration of the programme Dose intensity Coverage/Reach of included campaigns <i>In analysis 1.2</i> Scope Target populations Intervention Aim Setting Other <i>Whether part of a wider tobacco control</i></p>	<p>studies were included. Morbidity: <i>Target behaviour - regular smokers. Interventions for pregnant women were ineligible.</i></p> <p>Range of study sample sizes <i>311-5468 from 2 studies (sample size not reported in 9 studies).</i></p>	<p>quasi-randomised Repeated Cross Sectional <i>Interrupted time series</i></p> <p>Sub-group analysis Age Gender Education Race/ethnicity Duration of intervention</p>	<p>smoking and cardiovascular risk Attitudes: attitudes, norms, social influences on smoking and cardiovascular risk Behaviour: calls to quit-line</p> <p>Intermediate Behaviour: smoking prevalence Behaviour: smoking consumption Behaviour: quit attempts Behaviour: quit rates</p> <p>Distal <i>None reported</i></p> <p>Process outcomes Intervention costs</p>
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	<i>tobacco MMCs cause any adverse effects?</i>				<i>programme.</i> Reach of included campaigns Local <i>Community programmes.</i> Regional <i>US states e.g. California and Massachusetts.</i>			
Brinn (2010)³⁵ Low risk of bias High relevance	Topic: Tobacco use Was Mass Media sole focus? Yes Aim of review <i>To determine the strength of the evidence, that mass media interventions to prevent smoking in young people may: 1) reduce smoking uptake among youths (<25 years), 2) improve smoking attitudes, behaviour and knowledge, 3) improve self-</i>	Date range of included studies <i>1983-2010</i> (Date range of searches <i>1997-July 2010, date of last search)</i>	Number of studies 7 relevant studies (of 7 included studies)	OECD countries: USA (6), Norway (1)	Definition of Mass Media <i>Channels of communication such as television, radio, newspapers, bill boards, posters, leaflets or booklets intended to reach large numbers of people and which are not dependent on person to person contact.</i> Characteristics of the mass media interventions collected by the reviewers Theoretical framework Basis of programme design	Target population Age: <i>Less than 25 years</i> Range of study sample sizes <i>2534-2742 Not reported for most</i>	Type of synthesis Narrative synthesis Type(s) of studies synthesised RCTs / Trials Sub-group analysis <i>None reported</i>	Media Awareness Proximal Intention: to smoke Awareness/knowledge: smoking Attitudes: smoking norms Attitudes: smoking efficacy Intermediate Behaviour: smoking uptake Distal <i>None reported</i>

	<i>efficacy/self-esteem, 4) improve perceptions about smoking including the choice to follow positive role models.</i>				Components Start date Duration of the programme Target populations Reach of included campaigns Local Regional			
Brown (2012)⁵⁶ High risk of bias High relevance	Topic: Physical activity Was Mass Media sole focus? Yes Aim of review <i>The goal of the systematic review described in this summary was to determine the effectiveness of stand-alone mass media campaigns to increase physical activity at the population level</i> Theoretical Framework <i>"The analytic framework</i>	Date range of included studies <i>1980-2010</i> (Date range of searches <i>1980-2011)</i>	Number of studies 16 relevant studies (of 16 included studies)	Countries: <i>not reported</i>	Definition of Mass Media <i>Stand-alone mass media campaigns: "rely on mass media channels [e.g. newspapers, brochures, manuals, radio, TV, billboards, and websites singly or in combination] to deliver messages about physical activity to large and relatively undifferentiated audiences. ... [D]esigned to increase awareness and/or knowledge about benefits of physical activity, influence attitudes and beliefs about physical activity, and</i>	Target population <i>No target defined</i> Range of study sample sizes <i>N=9755 to N=74</i>	Type of synthesis Meta-analysis Narrative synthesis Type(s) of studies synthesised RCTs / Trials <i>three controlled trials</i> Cohort / Longitudinal study <i>five cohort studies</i> Observational / Correlational 5 Pre / Post test <i>three single-group studies using before–after designs.19,21,30</i> Sub-group analysis None reported	Media <i>None reported</i> Proximal <i>None reported</i> Intermediate Behaviour: increased self-report time spent in physical activity Behaviour: increased self-reported activity Distal <i>None reported</i> Process Intervention costs

<p><i>applied to this review of standalone mass media interventions is presented in Figure 2. Mass media physical activity campaigns are hypothesized to produce changes in proximal variables, such as heightened awareness and knowledge of the benefits of regular physical activity; and/or more favorable intentions, attitudes, and beliefs about physical activity. These changes can influence improvements in more-distal outcomes, such as physical activity behaviors, fitness, and, ultimately, reduced morbidity and mortality."</i></p>				<p><i>change physical activity behaviors within populations at community, state, or national levels."</i></p> <p>Characteristics of the mass media interventions collected by the reviewers</p> <p>Components Duration of the programme Dose intensity Coverage/Reach of included campaigns Target populations <i>For updated review</i> <i>Only four studies,32–34,36 two conducted among children and two among adults, met inclusion criteria.</i> Cost</p> <p>Reach of included campaigns</p> <p>National <i>1 national campaign, the rest not reported</i></p>			
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<p>Byrne (2005)⁶⁵</p> <p>High risk of bias</p> <p>High relevance</p>	<p>Topics: Multiple – alcohol use, tobacco use, illicit drug use</p> <p>Was Mass Media sole focus? Yes</p> <p>Aim of review <i>Aims to critically review the literature on past and current drug, alcohol, and tobacco use prevention media campaigns, examining the similarities across health communication programs believed to be effective, with the aim of viewing their applicability for the prevention of youth problem gambling. [RQs not specified]</i></p>	<p>Date range of included studies 1990-2003</p> <p>(Date range of searches 1990-2003)</p>	<p>Number of studies 25 relevant studies (of 25 included studies, reported in 53 articles)</p>	<p>OECD countries: <i>Restricted to North American interventions only. Majority developed and disseminated in the USA, but includes at least one Canadian campaign.</i></p>	<p>Definition of Mass Media <i>"organized outreach efforts using at least one form of community wide mass media. Local, multiple site, national campaigns and university-based campaigns were included, but school-based campaigns were excluded [problematic to compare large campaigns in naturalistic settings vs limited scope of a classroom] ... Interventions were delivered via radio, television, or a combination Interventions delivered via print were ... included if combined with audio or televised broadcasting." (p683)</i></p> <p>Characteristics of the mass media interventions collected by the reviewers</p>	<p>Target population Age: ≤21 years</p> <p>Range of study sample sizes <i>Not reported</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised Pre / Post test Post test</p> <p>Sub-group analysis Age Gender Race/Ethnicity Personality traits Message</p>	<p>Media Awareness Credibility</p> <p>Proximal Awareness/knowledge: substance use (illicit drugs, alcohol & tobacco) Attitudes: substance use (illicit drugs, alcohol & tobacco)</p> <p>Intermediate Behaviour: substance use (illicit drugs, alcohol & tobacco)</p> <p>Distal <i>None reported</i></p>
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					<p>Components Target populations</p> <p>Reach of included campaigns Local <i>From the campaign titles in Table 1 (e.g. The Rowan University Social Norms Project)</i> Regional <i>From the campaign titles in Table 1 (e.g. Massachusetts Tobacco Control Program, Oregon's Tobacco Prevention and Education Program)</i> National <i>From the campaign titles in Table 1 (e.g. Office of the National Drug Control Policy (ONDCP) National Youth Anti-Drug Media Campaign)</i></p>			
<p>Carter (2015)⁴⁷</p> <p>Low risk of bias</p> <p>High relevance</p>	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? No</p>	<p>Date range of included studies <i>1989-2011</i></p> <p>(Date range of searches</p>	<p>Number of studies 14 relevant studies (of 17 included studies)</p>	<p>UK studies: 2</p> <p>OECD countries: <i>USA (11), UK (2), Australia</i></p>	<p>Definition of Mass Media <i>Studies that focused on condom use or sexual health promotion, when it was done not solely for HIV or STD</i></p>	<p>Target population <i>Not reported</i></p> <p>Range of study sample sizes <i>57 (Hall '96) to 6,122 (Bull '08)</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials <i>4 studies</i> Cohort / Longitudinal</p>	<p>Media <i>None reported</i></p> <p>Proximal Intention: To use contraception Awareness/knowledge: sexual health</p>

	<p>Aim of review Community education may involve activities that seek to raise awareness and promote behavior change, using mass media, social media, and other media or interpersonal methods in community settings. This systematic review evaluated the evidence of the effects of community education on select short- and medium-term family planning outcomes Does community education result in improved, select medium-term outcomes of family planning services? 2 Does community education result in improved short-term outcomes of</p>	<p>Jan 1985 to Feb 2011)</p>		<p>(2), Sweden (2)</p>	<p>prevention but also included pregnancy prevention messaging as a component.</p> <p>Characteristics of the mass media interventions collected by the reviewers Components Intervention Aim Studies were diverse in terms aims, the evaluated interventions, and the evaluation approach. 5 focused on raising awareness about emergency contraception,[8–12]; 4 focused on condom promotion [13–16]; 2 were focused on increasing parental communication with their children about sex,[17–18]; 2 were focused on increasing reproductive health service use, [19–20]; 1 was aimed at delaying sexual debut,[21]; 3 were aimed at increasing</p>		<p>study 2 were retrospective cohort studies,1 was a longitudinal cohort study Pre / Post test 2 used pre–post designs Repeated Cross Sectional 8 used time series cross-sectional study designs, 3 with comparison or control groups, and 5 without.</p> <p>Sub-group analysis None reported</p>	<p>Awareness/knowledge: contraception Attitudes: use of family planning Beliefs: risk of pregnancy Behaviour: use of family planning services</p> <p>Intermediate None reported</p> <p>Distal None reported</p>
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	<p><i>family planning services? 3 Are there unintended negative consequences of community education in family planning program development and review? 4 What are the barriers and facilitators facing clients in participating in community education activities? 5 What are the barriers and facilitators facing health centers in adopting and implementing community education activities?</i></p> <p>Theoretical Framework See figure 1 pg S109</p>				<p><i>sexual health knowledge and related behaviors [7,22–23].</i></p> <p>Reach of included campaigns Local Regional National</p>			
Derzon (2002) ⁶⁶	<p>Topics: Multiple – alcohol use, tobacco use, illicit drug use</p>	<p>Date range of included studies <i>not reported</i></p>	<p>Number of studies 72 relevant studies (of 72)</p>	<p>OECD countries: <i>developed</i></p>	<p>Definition of Mass Media <i>Eligible media interventions</i></p>	<p>Target population Age: <i>youth ≤21 years</i></p>	<p>Type of synthesis Meta-analysis</p>	<p>Media Channel Approach</p>

High risk of bias High relevance	<p>Was Mass Media sole focus? Yes</p> <p>Aim of review <i>A synthesis into the capability of media interventions to reduce youth substance-use.</i></p>	(Date range of searches not reported)	included studies)	<i>Western countries</i>	<p><i>included messages designed for dissemination to a specific audience or the general public and delivered via print, audio, video or electronic media or some combination thereof.</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Components</p> <p>Reach of included campaigns Not reported</p>	<p>Other: parents "interventions intended to change PARENTS' or other YOUTH-INFLUENTIAL ADULTS' knowledge, attitudes, behaviors, and so on, were also eligible if the theme of the message was to encourage attention to the youth problem" (p239-40)</p> <p>Range of study sample sizes <i>90 distinct subject samples</i></p>	<p>Type(s) of studies synthesised RCTs / Trials <i>quasi experimental designs</i></p> <p>Sub-group analysis Age Gender Risk status</p>	<p>Duration of intervention Message Target</p> <p>Proximal Awareness/knowledge: substance use (illicit drugs, alcohol & tobacco) Attitudes: substance use (illicit drugs, alcohol & tobacco)</p> <p>Intermediate Behaviour: substance use (illicit drugs, alcohol & tobacco)</p> <p>Distal <i>None reported</i></p>
<p>Ferri (2013)⁶²</p> <p>Low risk of bias High relevance</p>	<p>Topic: Illicit drug use</p> <p>Was Mass Media sole focus? Yes</p>	<p>Date range of included studies <i>1992-2011</i></p> <p>(Date range of searches 1974-2013)</p>	Number of studies 23 relevant studies (of 23 included studies)	OECD countries: <i>21 in USA, 1 in USA and Canada, 1 Australia</i>	Definition of Mass Media <i>mass media defined as "channels of communication such as television, radio, newspapers, billboards, posters,</i>	<p>Target population Age: <i>young people</i></p> <p>Range of study sample sizes <i>79 (Kelly 1992)</i></p>	<p>Type of synthesis Meta-analysis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials Cohort / Longitudinal</p>	<p>Media <i>None reported</i></p> <p>Proximal Intentions: <i>Use of illicit drugs</i> Awareness/Knowledge: <i>Use of illicit</i></p>

<p>Aim of review To assess the effectiveness of mass media campaigns in preventing or reducing the use of or intention to use illicit drugs among young people.</p> <p>Theoretical Framework Health belief model, theory of reasoned action/theory of planned behaviour, social norms theory, super peer theory, social learned theory. page 4</p>				<p>leaflets or booklets intended to reach large numbers of people and which are not dependent on person to person contact"</p> <p>Characteristics of the mass media interventions collected by the reviewers Theoretical framework table on page 10 records "explicit underpinning theory" Components Target populations characteristics of studies tables for each study includes any targetting of the intervention. No studies had subjects younger than age 10 years. 21 studies were between the age of 10 and 20. 2 studies had subjects older than 20, younger than 26. Setting 11 studies conducted in 1 setting, (8</p>	<p>to 130,245 (Carpenter 2011)</p>	<p>study Pre / Post test Other interrupted time series</p> <p>Sub-group analysis Age</p>	<p>drugs Attitude: Use of illicit drugs</p> <p>Intermediate Behaviour: Use of illicit drugs</p> <p>Distal None reported</p>
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					<p><i>studies in school/college setting, 2 in community setting, 1 a national state-wide setting). 12 conducted in multiple settings (3 in schools/community, 8 in community and national settings, "while 1 reported evaluations of two similar but distinctive interventions, 1 implemented in a school and community setting and 1 aired to the whole nation" page 9</i></p> <p>Reach of included campaigns</p> <p>Local <i>school/college/comm unity settings</i></p> <p>Regional <i>state</i></p> <p>National <i>nationwide campaign</i></p>			
<p>Finlay (2005)⁵⁷</p> <p>High risk of bias</p>	<p>Topic: Physical activity</p> <p>Was Mass Media sole focus?</p>	<p>Date range of included studies</p> <p><i>1998-2002</i></p>	<p>Number of studies</p> <p>8 relevant studies (of 8 included in</p>	<p>UK studies: 3</p> <p><i>(reported for 1998-studies</i></p>	<p>Definition of Mass Media</p> <p><i>An intervention using a component of community-wide</i></p>	<p>Target population</p> <p><i>Not reported</i></p>	<p>Type of synthesis</p> <p>Narrative synthesis</p> <p>Type(s) of studies synthesised</p>	<p>Media</p> <p>Recall</p> <p>Proximal</p> <p>Awareness/Knowle</p>

<p>High relevance</p>	<p>Yes</p> <p>Aim of review <i>The 1998-2002 studies (interventions) were reviewed for their success in impacting message recall and behaviour change. The newer studies plus those identified by Kahn et al 2002 and Marcus et al 1998, were assessed for the presence of a more sophisticated understanding of the media processes of inception, transmission and reception.</i></p>	<p><i>(part 1), 1980-2002 (part 2)</i></p> <p>(Date range of searches <i>1997 (since inclusion in the Marcus et al 1998 review) to Dec 2002)</i></p>	<p>initial effectiveness analysis plus an additional 9 in the critical media analysis, n=17)</p>	<p><i>only)</i></p> <p>OECD countries: <i>USA (3), UK (3), Australia (1), Canada (1) (reported for 1998-studies only)</i></p>	<p><i>mass media (interpersonal communication, workplace or school-based campaigns and small group settings were excluded). Inclusion criterion for 'media' in the title or abstract of the study.</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Theoretical framework Components Coverage/Reach of included campaigns Target populations <i>see table 1</i></p> <p>Reach of included campaigns Local <i>e.g. Towns</i> Regional <i>States in US eg Virginia</i> National <i>eg England</i></p>	<p>Range of study sample sizes <i>Not reported</i></p>	<p>Pre / Post test <i>Third, the study consisted of a pre–post design assessing a physical activity intervention using a component of community- wide mass media. Studies had to meet this inclusion criteria - no further info given</i></p> <p>Sub-group analysis Education Ethnicity</p>	<p>dge: physical activity</p> <p>Intermediate Behaviour: increased changes in physical activity</p> <p>Distal <i>None reported</i></p>
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<p>French (2014)⁴⁸</p> <p>Low risk of bias</p> <p>High relevance</p>	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? Yes</p> <p>Aim of review <i>An exploratory review was conducted to assess research examining awareness, acceptability, effects on HIV testing, disclosure and sexual risk, and cost-effectiveness of HIV mass media campaigns targeting MSM.</i></p>	<p>Date range of included studies <i>1995-2011</i></p> <p>(Date range of searches <i>between 1990 and May 2011)</i></p>	<p>Number of studies 12 relevant studies (of 12 included studies)</p>	<p>UK studies: 7</p> <p>OECD countries: 7 UK, 4 USA, 1 Canada</p>	<p>Definition of Mass Media <i>Mass media campaigns relating to HIV health promotion that targeted MSM were included. Unpaid for media coverage and interactive media health promotion interventions (such as use of internet chat rooms) were excluded. Interventions that only included small media, such as leaflets, were excluded, but those where mass media were complemented with small media were included.</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Theoretical framework <i>Furthermore, only two studies described the theory of change underlying the</i></p>	<p>Target population Other: <i>sexual orientation - men having sex with men</i></p> <p>Range of study sample sizes <i>55,270 - 242</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials Pre / Post test Post test</p> <p>Sub-group analysis Message (campaign)</p>	<p>Media Awareness Identification</p> <p>Proximal Behaviour: HIV testing</p> <p>Intermediate <i>None reported</i></p> <p>Distal <i>None reported</i></p> <p>Process outcomes Intervention costs</p>
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				<p><i>intervention; one drawing on the Health Belief Model [14] and the other on social marketing concepts [15,28].</i></p> <p>Basis of programme design</p> <p><i>“Formative research was used to inform the development of the campaign concepts, content and materials in five interventions, including: use of focus groups with the target population [14,15,18,23-26,28], meetings with health agencies or community members [16,23-26], and community field testing [14,22].”</i></p> <p><i>The authors note that this “helped to adapt an existing intervention to a new geographical setting” and “that campaign content addressed men’s preferences and needs” for two programmes [15,28].</i></p> <p>Components</p>			
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					<p>Target populations <i>Seven targeted all MSM [16-19,21,23-26,29]. The remainder targeted specific sub-groups of MSM by age [9,27] or ethnic sub-groups [9], recent unprotected sexual intercourse with men of unknown or discordant HIV status [15,22,28] and perceived HIV-negative serostatus [14]. None reported aiming to target MSM according to sexual identity.</i></p> <p>Cost <i>Campaign costs were reported in four studies [9,15,18,23-26,28]. Costs ranged from \$250,000 for the national campaign in Canada [15,28] to £9,500 for media placement, artists' fees and staff time for the "Stella Seattle" newspaper comic strip [18].</i></p> <p>Intervention Aim <i>Most aimed to provide information</i></p>		
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					<p><i>on HIV prevention strategies and encourage HIV testing. Despite most moving away from basic 'use a condom' messages, few aimed to provide men with information on negotiating safer sex or disclosing their HIV status to a sexual partner.</i></p> <p>Reach of included campaigns Local 6 city-wide Regional 1 US state National 4 country-wide</p>			
<p>Guillaumer (2012)⁴⁰</p> <p>Low risk of bias</p> <p>High relevance</p>	<p>Topic: Tobacco use</p> <p>Was Mass Media sole focus? Yes</p> <p>Aim of review 1. Systematically review the published evidence of the effectiveness of mass media</p>	<p>Date range of included studies 1992-2011</p> <p>(Date range of searches Published before March 2012, start of date range not reported.</p>	<p>Number of studies 17 relevant studies (of 17 included studies)</p>	<p>OECD countries: USA (10), Australia (5), New Zealand (2)</p>	<p>Definition of Mass Media Channels of communication such as television, radio, newspapers, billboards, posters, leaflets or booklets intended to reach large numbers of people, and which are not dependent on person-to-person contact.</p>	<p>Target population Age: over 18 years Socio-economic status: Studies were required to assess general campaign impacts by some measure of equity or</p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials Cohort / Longitudinal study Observational / Correlational Pre / Post test Repeated Cross Sectional</p>	<p>Media Awareness Credibility Attitudinal / emotional responses</p> <p>Proximal Intention: Motivation: Behaviour: information seeking</p>

<p><i>campaigns (with the primary purpose of encouraging smokers to quit) with smokers from socially disadvantaged groups in terms of:</i></p> <ul style="list-style-type: none"> <i>• The differential effectiveness of mass media campaigns according to sociodemographic group</i> <i>• The effectiveness of campaigns targeted towards disadvantaged groups.</i> <p><i>2. Critique the methodological quality of the evidence for the effectiveness of mass media campaigns with disadvantaged groups.</i></p>					<p>Characteristics of the mass media interventions collected by the reviewers</p> <p>Start date Duration of the programme Dose intensity Scope Target populations <i>Ethnic groups (as a marker of disadvantage)</i> Intervention Aim</p> <p>Reach of included campaigns</p> <p>Local <i>At least 4 studies conducted at a community/city level.</i></p> <p>National <i>At least 1 study conducted at a national level.</i></p>	<p><i>disadvantage, or investigate campaigns targeted towards disadvantaged groups. Studies were included if they described their sample according to social class, income, education, occupation, ethnic/racial group and/or SES (measured as a global construct), or if they described samples with characteristics associated with high smoking prevalence and socioeconomic disadvantage such as: people with a mental illness and homeless people.</i></p> <p>Ethnicity: See SES</p>	<p>Sub-group analysis</p> <p>Socio-economic status</p>	<p>Intermediate Behaviour: smoking cessation</p> <p>Distal <i>None reported</i></p>
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						Range of study sample sizes <i>198-2714 from 5 studies ('n' not reported for 12 studies)</i>		
Jepson (2006)⁴³ Low risk of bias High relevance	Topic: Tobacco use Was Mass Media sole focus? Yes Aim of review <i>To synthesise evidence evaluating the effectiveness of mass media interventions on helping people to quit smoking/tobacco use and/or to prevent relapse. These interventions were considered for both the effectiveness of the channel of communication and also for the effectiveness of</i>	Date range of included studies <i>1990-2006</i> (Date range of searches <i>1990-2006)</i>	Number of studies 39 relevant studies (of 44 included studies – 5 systematic reviews)	UK studies: 4 OECD countries: USA, New Zealand, Canada, Switzerland, Australia, Wales, Norway, Finland, Netherlands, UK	Definition of Mass Media <i>Channels of communication which are not dependent on person to person contact such as:</i> • Television • Radio • Newspapers • Bill boards • Posters • Leaflets or booklets intended to reach large numbers of people • The Internet • SMS • Podcasts • Unpaid publicity through these media; local and national Characteristics of the mass media interventions collected by the reviewers Scope Target populations Intervention Aim	Target population Other: <i>People who use tobacco products</i> Range of study sample sizes <i>Not reported</i>	Type of synthesis Narrative synthesis Type(s) of studies synthesised RCTs / Trials Cohort / Longitudinal study Pre / Post test Post test Repeated Cross Sectional Other <i>Process evaluation; 'observation/ethnography'</i> Sub-group analysis Gender Education Channel Approach <i>Message style</i> Race/Ethnicity	Media Awareness Proximal Behaviour: calls to quit-line Intermediate Behaviour: smoking cessation Distal Societal change (stigma) Process outcomes Intervention costs

	<i>message content, and this is reported under six research questions. Particular emphasis was placed on evaluating relevance to the UK setting and effectiveness within population groups such as young people, pregnant smokers and hard to reach communities.</i>				Setting Reach of included campaigns Local Regional National			
Leavy (2011)⁵⁹ High risk of bias High relevance	Topic: Physical activity Was Mass Media sole focus? Yes Aim of review <i>Internationally, mass media campaigns to promote regular moderate-intensity physical activity have increased recently. Evidence of mass media</i>	Date range of included studies <i>2003-2010</i> (Date range of searches <i>2003-2010)</i>	Number of studies 18 relevant studies (of 18 included studies)	OECD countries: <i>USA (n=8), Australia (n=3), Canada (n=3), Belgium (n=1) and New Zealand (n=1)</i> Non-OECD countries: <i>2 were conducted in middle-</i>	Definition of Mass Media <i>a clear mass media and/or social marketing component that relates specifically to physical activity OR fitness OR exercise; paid or unpaid media or a combination of both</i> Characteristics of the mass media interventions collected by the reviewers	Target population Age: Adult Range of study sample sizes <i>297 - 7217 (Wray [34] and Craig [29-30])</i>	Type of synthesis Narrative synthesis Type(s) of studies synthesised <i>RCTs / Trials quasi-experimental (n = 5), Three of the five quasi-experimental design studies collected baseline and follow-up measures from a cohort using telephone surveys in the intervention and a comparison community selected</i>	Media <i>Awareness Exposure</i> Proximal <i>Intention: to be more active</i> Intermediate <i>Behaviour: increased change in physical activity</i> Distal <i>None reported</i> Process <i>Intervention costs</i>

<p><i>campaign effectiveness exists in other health areas, however the evidence for physical activity is limited. The purpose was to systematically review the literature on physical activity mass media campaigns, 2003-2010. to undertake a systematic review of the literature on physical activity mass media campaigns from 2003 to 2010 and to assess progress and quality of (i) campaign evaluation design and sampling, (ii) use of theory and formative research in campaign development and (iii) evidence of campaign effects</i></p>			<p><i>income countries in South America (Columbia and Brazil).</i></p>	<p>Theoretical framework Over the 18 campaigns, “included: theory of reasoned action and planned belief [33], theory of planned behaviour [40], McGuire’s HOE [31, 36, 37], stages of change [27, 36, 41, 42], health belief model [34], social ecological model [21, 24, 25, 27, 42] and a social marketing framework [25, 32, 33, 36].” Seven reported a combination [22, 25, 27, 33, 36, 40, 42]. Only half reported formative research [2, 22–25, 28, 32, 34–36, 40]. Basis of programme design formative evaluations Components Start date Duration of the programme Campaign duration ranged from: as short</p>	<p><i>to have similar demographic profile but separated geographically and with distinct media markets [21–23]. Wheeling Walks (United States) also used a quasiexperimental, cohort design but had multiple collection points at baseline and 3-, 6- and 12-month follow-up [24]. The 10 000 Steps Rockhampton used a quasi-experimental design, collecting baseline and follow-up using a cross-sectional sample of populations from the intervention and comparison communities [25]. The fifth study Walk to Work Day (Australia) was a national campaign, and it was not feasible to find an uncontaminated comparison community [26]. Observational /</i></p>	
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<p><i>including proximal, intermediate and behavioural outcomes (p1061)</i></p> <p>Theoretical Framework <i>Campaign impact was classified as: 'proximal' (exposure/awareness), intermediate (knowledge, attitudes, beliefs, saliency and intention or 'initial trial' behaviours) and 'distal' (physical activity behaviour). This typology aligns with the hierarchy of effects (HOE) framework [5, 20].</i></p>				<p><i>as 8–13 weeks (n = 6); around 6 months (n = 3), 12 months (n = 2); several phases over 12–24 months (n = 2) and greater than 2 years (n = 5). Dose intensity Coverage/Reach of included campaigns Target populations Cost</i></p> <p>Reach of included campaigns Regional National</p>	<p>Correlational Six campaigns used 'post-only' cross-sectional designs [31–36]. Pre / Post test Two other campaigns were evaluated using an intervention group only, pre– post-campaign cross-sectional design [28–30]. Repeated Cross Sectional Push Play (New Zealand) and Agita Sa~o Paulo (Brazil) were evaluated using independent crossectional population-based surveys at annual or biennial intervals [2, 27]. Unclear Mue´vete Bogota [38] did not specify an overall evaluation design: "they used extensive formal and informal evaluation of the settings-based strategies including participation rates at community-wide</p>	
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							<p>events, number of capacity building workshops delivered and the percentage of companies who created their own physical activity message/logo [38].”</p> <p>Other non-experimental (n = 12), and a mixed methods design (n = 1). Healthy U (Canada) used a ‘mixed methods’ combining quantitative telephone surveys and qualitative focus groups to gain insights into campaign effects [37].</p> <p>Sub-group analysis None reported</p>	
<p>Richardson (2008)⁴⁴</p> <p>Low risk of bias</p> <p>High relevance</p>	<p>Topic: Tobacco use</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review The review had 2 aims, to examine:</p>	<p>Date range of included studies 1994-2007</p> <p>(Date range of searches 1990 - July 2007)</p>	<p>Number of studies 37 relevant studies (of 41 included studies – 4 systematic reviews)</p>	<p>UK studies: 1</p> <p>OECD countries: USA (32) Australia (2) UK (1) Sweden (1)</p>	<p>Definition of Mass Media Programmes or campaigns aimed at reaching large numbers of people via television, internet, radio, newspapers, bill boards, posters</p>	<p>Target population Age: Less than 18 years</p> <p>Range of study sample sizes 27-103172 from 36 studies (1 study 'n' not</p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials Cohort / Longitudinal study Post test Other</p>	<p>Media Awareness Understanding Credibility Attitudinal / emotional responses</p> <p>Proximal Awareness/knowledge</p>

	<i>(1) effectiveness of mass media interventions designed to prevent the uptake of smoking in children and young people; and (2) effectiveness of interventions that designed to prevent the illegal sale of tobacco to children and young people. Sub-questions related to factors that may influence effectiveness, any differential effects for different audiences, and facilitators and barriers to implementation.</i>			Non-OECD countries: <i>South Korea (1)</i>	<i>leaflets, booklets and new media. New media includes media such as podcasts, text messaging, bebo, facebook, and social networking websites.</i> Characteristics of the mass media interventions collected by the reviewers Basis of programme design Duration of the programme Target populations Reach of included campaigns Local Regional	<i>reported - table 5)</i>	<i>Qualitative</i> Sub-group analysis Age Gender Socio-economic status Race/Ethnicity	<i>dge: <u>Knowledge</u>, attitudes, intentions towards tobacco use & the tobacco industry</i> Intermediate Behaviour: smoking uptake Distal <i>None reported</i>
Robinson (2014)⁶⁹ Low risk of bias High relevance	Topics: Multiple – physical activity, sexual health, tobacco use Was Mass Media sole focus? Yes Aim of review <i>This review aimed</i>	Date range of included studies <i>1999-2010</i> (Date range of searches <i>not reported)</i>	Number of studies 11 relevant study arms (of 25 study arms in 22 included studies)	OECD countries: <i>9 study arms in the US (6 condoms use and 3 smoking cessation), 1 study arm in</i>	Definition of Mass Media <i>In this review, mass media health communication campaigns combined with health-related product distribution had to meet two criteria: i) to use messages designed</i>	Target population <i>No target defined</i> Range of study sample sizes <i>Not reported</i>	Type of synthesis Meta-analysis Narrative synthesis Type(s) of studies synthesised Unclear Sub-group analysis Approach <i>Product distribution</i>	Media <i>None reported</i> Proximal Intention: to call smoking quit-lines Intermediate Behaviour: condom use

<p><i>to assess the effectiveness of health communication campaigns that include both mass media and health-related product distribution to increase healthy behavior change. (The criterion requiring campaigns to use a mass media channel was developed to decrease the challenge of distinguishing campaigns from health education interventions, resulting in a more homogenous body of evidence, and allowing for a well-defined scope for a systematic review.)</i></p> <p><i>The review had 5 objectives (i) to assess and evaluate high-priority public</i></p>			<p><i>Australia (phys act), and 1 study arm in Belgium (phys act)</i></p>	<p><i>to increase awareness of, demand for, and appropriate use of a product. (Messages had to be delivered through multiple channels, including one mass media to ensure multiple exposures.); and ii) to distribute a product to enable the adoption or maintenance of health-promoting behaviours, or to sustain cessation of harmful behaviours, or to protect against behaviour-related disease or injury. (Products were free or discounted to overcome cost-related barriers.)</i></p> <p>Characteristics of the mass media interventions collected by the reviewers</p> <p>Theoretical framework Components Duration of the</p>		<p>Race/Ethnicity Sexual orientation/gender identity</p>	<p>Distal <i>None reported</i></p> <p>Process outcomes Intervention costs</p>
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<p><i>health outcomes; (ii) to evaluate the potential utility of social marketing concepts in improving effectiveness of health-promotion campaigns; (iii) to provide specific recommendations to enhance current strategic and operational approaches; (iv) to answer questions about the value of using social marketing and health communication principles in the field; and (v) to determine whether these principles are broadly applicable. [RQs not specified]</i></p> <p>Theoretical Framework <i>Conceptual model on p.363</i></p>				<p>programme Cost <i>Whether the related product was distributed for free or at reduced-price</i></p> <p>Reach of included campaigns <i>Not reported</i></p>			
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<p>Swanton (2015)⁵³</p> <p>Low risk of bias</p> <p>High relevance</p>	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review <i>The aim of the present research was to examine the effect that new-media-based sexual-health interventions have on sexual-health behaviours in non-clinical populations and to determine the factors that moderate the effect of technology-based sexual-health interventions on sexual-health behaviours.</i></p>	<p>Date range of included studies 2007-2013</p> <p>(Date range of searches searched in Sep 2013 and updated in Sep 2014)</p>	<p>Number of studies 12 relevant studies (of 15 included studies)</p>	<p>Countries: <i>Not reported</i></p>	<p>Definition of Mass Media <i>Delivered exclusively through new media</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Components</p> <p>Reach of included campaigns <i>Not reported</i></p>	<p>Target population <i>No target defined</i></p> <p>Range of study sample sizes <i>Not reported</i></p>	<p>Type of synthesis Meta-analysis</p> <p>Type(s) of studies synthesised RCTs / Trials</p> <p>Sub-group analysis Age Gender Approach <i>Interactive / static</i> Duration of intervention Sexual orientation/gender identity Research design</p>	<p>Media <i>None reported</i></p> <p>Proximal <i>None reported</i></p> <p>Intermediate Behaviour: increased condom use</p> <p>Distal <i>None reported</i></p>
<p>Werb (2011)⁶³</p> <p>High risk of bias</p> <p>High relevance</p>	<p>Topic: Illicit drug use</p> <p>Was Mass Media sole focus? Yes</p>	<p>Date range of included studies 1991-2008</p> <p>(Date range of searches searched for</p>	<p>Number of studies 11 relevant studies (of 11 included studies)</p>	<p>OECD countries: <i>USA (10), Australia (1)</i></p>	<p>Definition of Mass Media <i>national anti-drug youth media campaign, public service announcement, 'PSA'. PSAs were defined as</i></p>	<p>Target population Age: <i>youth (review didn't give any exact age range)</i></p>	<p>Type of synthesis Meta-analysis</p> <p>Type(s) of studies synthesised RCTs / Trials <i>7 RCTs included</i> Observational /</p>	<p>Media <i>None reported</i></p> <p>Proximal Intentions: <i>Use of illicit drugs</i></p>

	<p>Aim of review <i>To investigate the state of the research related to the effectiveness of anti-illicit drug public service announcements in modifying behaviour and intention to use illicit drugs among target populations</i></p>	<p><i>studies published between 1989 and 2008)</i></p>			<p><i>'produced for a variety of media channels including tv, radio, print and the internet'.</i></p> <p>Characteristics of the mass media interventions collected by the reviewers <i>Duration of the programme table 1 notes duration of programme - the length of the included studies ranged from immediate post-test up to 5 years post test. the table also reports if available on the number of weeks the intervention ran for.</i> <i>Dose intensity table 1 page 836 records the number of the public service announcements, and the time of exposure</i> <i>Target populations table 1 page 836 notes where any of the studies targetted specific populations</i></p>	<p>Range of study sample sizes <i>from 93 to 9598</i></p>	<p><i>Correlational 4 observational studies included</i></p> <p>Sub-group analysis <i>Research design Personality traits</i></p>	<p>Intermediate <i>Behaviour: Use of illicit drugs</i></p> <p>Distal <i>None reported</i></p>
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					<p>(e.g. public school students, college students). Setting table 1 page 386 notes the setting = country (USA or Australia)</p> <p>Reach of included campaigns Unclear. at least one national campaign</p>			
<p>Wilson (2012)⁴⁵</p> <p>Low risk of bias</p> <p>High relevance</p>	<p>Topic: Tobacco use</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review To evaluate the independent effect on smoking prevalence of four tobacco control policies outlined in the WHO MPOWER Package: increasing taxes on tobacco products, banning smoking in public places, banning advertising and</p>	<p>Date range of included studies 1991-2011</p> <p>(Date range of searches Medline 1990-Jan 2012; other databases 1990-Feb 2009)</p>	<p>Number of studies 19 relevant studies (of 84 included studies)</p>	<p>UK studies: 1</p> <p>OECD countries: USA, Norway, Netherlands, UK, Australia, South Africa</p>	<p>Definition of Mass Media Any campaign intended to reduce tobacco use using channels of communication such as television, radio, newspapers, billboards, posters, leaflets, or booklets intended to reach large numbers of people, which are not dependent on person-to-person contact</p> <p>Characteristics of the mass media interventions collected by the reviewers</p>	<p>Target population No target defined</p> <p>Range of study sample sizes 310-343835 where reported, n not reported for 6 studies</p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials Cohort / Longitudinal study Pre / Post test Controlled before and after; uncontrolled before and after Repeated Cross Sectional Time series</p> <p>Sub-group analysis Age</p>	<p>Media None reported</p> <p>Proximal None reported</p> <p>Intermediate Behaviour: smoking initiation Behaviour: smoking prevalence Behaviour: smoking cessation</p> <p>Distal None reported</p>

	<p><i>sponsorship of tobacco products, and educating people through health warning labels and antitobacco mass media campaigns.</i></p> <p>Theoretical Framework WHO MPOWER Package</p>				<p>Start date Duration of the programme Target populations</p> <p>Reach of included campaigns <i>Not reported</i></p>			
<p>Bertrand (2006)⁴⁶</p> <p>Low risk of bias</p> <p>Low relevance</p>	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? Yes</p> <p>Aim of review <i>To review the strength of the evidence for the effects of three types of mass media interventions (radio only, radio with supporting media, or radio and television with supporting media) on HIV/AIDS-related behaviour among</i></p>	<p>Date range of included studies <i>1995-2006</i></p> <p>(Date range of searches <i>1990 to 2004)</i></p>	<p>Number of studies 15 relevant studies (of 15 included studies)</p>	<p>Non-OECD countries: <i>11 examined interventions in Africa, 2 in Latin America, 1 in Asia, and 1 examined a programme that took place in 44 developing countries</i></p>	<p>Definition of Mass Media <i>“a programme that conveys messages through channels that reach a broad audience. Media include radio, television, video, print, and the Internet; the programmes may take different forms, such as radio variety shows, songs, advertisements or public service announcements, soap operas, music videos, films, pamphlets, billboards, posters and interactive web</i></p>	<p>Target population <i>Age: young people</i></p> <p>Range of study sample sizes <i>11,904 - 297</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised Other <i>No randomised trials</i></p> <p>Sub-group analysis Channel (campaign) Dose response relationship (campaign)</p>	<p>Media <i>None reported</i></p> <p>Proximal Awareness/knowledge: health products/service Awareness/knowledge: HIV transmission; condom use; HIV risk; prevention methods Beliefs: personal risk of HIV/AIDS Self-efficacy: using condoms Behaviour: Use of HIV service/clinic</p> <p>Intermediate <i>None reported</i></p>

	<i>young people in developing countries and to assess whether these interventions reach the threshold of evidence needed to recommend widespread implementation.</i>				<i>sites”</i> <i>Authors categorised the most common types of mass media interventions to prevent HIV transmission used in developing countries: radio only, radio with other supporting media, and radio and television with other supporting media.</i> Characteristics of the mass media interventions collected by the reviewers Components Reach of included campaigns Local Regional National			Distal <i>None reported</i>
Brown (2014a)³⁷ High risk of bias Low relevance	Topic: Tobacco use Was Mass Media sole focus? No Aim of review <i>To assess the effectiveness of</i>	Date range of included studies 2000-2013 (Date range of searches 1995-2012/3, dates varied	Number of studies 30 relevant studies (of 117 included studies)	UK studies: 1 OECD countries: USA (16), Netherlands (5), Australia (3),	Definition of Mass Media <i>Not reported</i> Characteristics of the mass media interventions collected by the reviewers Components	Target population Age: 18 years or over plus studies measuring children's reports of parental smoking.	Type of synthesis Narrative synthesis Type(s) of studies synthesised RCTs / Trials Cohort / Longitudinal study Observational / Correlational	Media Awareness Proximal Behaviour: calls to quit-line Intermediate <i>None reported</i>

	<i>population-level interventions/policies to reduce socioeconomic inequalities in smoking among adults by assessing primary studies of any intervention/policy that reported differential effects on a smoking-related outcome in at least two socioeconomic groups.</i>	<i>between databases)</i>		<i>Canada (2), UK (1), New Zealand (1)</i> Non-OECD countries: <i>Croatia (1), Russia (1)</i>	Duration of the programme Reach of included campaigns National <i>1 national, the rest unclear</i>	Socio-economic status: <i>Studies had to report differential smoking-related outcomes for at least two socioeconomic groups.</i> Range of study sample sizes <i>Not reported</i>	<i>Cross-sectional, Comparison between different types of intervention</i> Pre / Post test Repeated Cross Sectional Sub-group analysis Socio-economic status	Distal <i>None reported</i>
Brown (2014b)³⁶ High risk of bias Low relevance	Topic: Tobacco use Was Mass Media sole focus? No Aim of review <i>What is the equity impact of interventions/policies to reduce youth smoking?</i>	Date range of included studies <i>1997-2013 (relevant study 2009)</i> (Date range of searches <i>Published since 1995 to Oct 2013)</i>	Number of studies 1 relevant study (of 38 included studies)	OECD countries: <i>USA (1)</i>	Definition of Mass Media <i>Not reported</i> Characteristics of the mass media interventions collected by the reviewers Components Target populations Reach of included campaigns National	Target population Age: <i>0-25 years</i> Socio-economic status: <i>Studies had to report outcomes for two or more SES groups</i> Range of study sample sizes <i>30512 (1 study)</i>	Type of synthesis Narrative synthesis Type(s) of studies synthesised Post test Sub-group analysis Socio-economic status	Media Awareness Salience Proximal <i>None reported</i> Intermediate <i>None reported</i> Distal <i>None reported</i>
de Kleijn (2015)³⁸	Topic: Tobacco use	Date range of included studies	Number of studies 4 relevant	OECD countries:	Definition of Mass Media	Target population Age: <i>Less than</i>	Type of synthesis Meta-analysis <i>None of the 4</i>	Media <i>None reported</i>

High risk of bias Low relevance	<p>Was Mass Media sole focus? No</p> <p>Aim of review <i>The primary aim of this review was to determine how effective school-based interventions are in preventing smoking in girls, and the secondary objective was to determine which interventions are most successful.</i></p>	<p><i>1997-2014 (relevant studies 1996-2006)</i></p> <p>(Date range of searches <i>1992-Jan 2015 (date of searches)</i></p>	<p>studies (of 37 included studies)</p>	<p><i>USA (3), Norway (1)</i></p>	<p><i>Antismoking advertisements</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Duration of the programme Dose intensity Target populations</p> <p>Reach of included campaigns Local Regional</p>	<p><i>18 years</i></p> <p>Gender: <i>Female (non-targeting interventions were included, but only studies that present results for girls were included)</i></p> <p>Range of study sample sizes <i>Described as final sample: 325-10170 (from 3 studies - 1 other study 'n' not reported)</i></p>	<p><i>relevant studies included in the pooled analysis</i> Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials <i>1 RCT; 3 'other controlled trial'</i></p> <p>Sub-group analysis <i>None reported</i></p>	<p>Proximal <i>None reported</i></p> <p>Intermediate Behaviour: smoking uptake</p> <p>Distal <i>None reported</i></p>
Ellis (2003) ⁶⁷ Low risk of bias Low relevance	<p>Topics: Multiple – diet, tobacco use</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review <i>The overall objectives of this evidence report are: (1) to provide an overview of the cancer control interventions</i></p>	<p>Date range of included studies <i>1986-1998</i></p> <p>(Date range of searches <i>1980-2001/02, varied between databases)</i></p>	<p>Number of studies 8 relevant studies (of 31 included studies)</p>	<p>OECD countries: <i>7 USA, 1 Australia</i></p>	<p>Definition of Mass Media Not reported</p> <p>Characteristics of the mass media interventions collected by the reviewers Target populations</p> <p>Reach of included campaigns Local Regional</p>	<p>Target population Age: <i>Reports focusing exclusively on children or adolescents were excluded</i></p> <p>Other: <i>Excluded: studies exclusively focused on prenatal smoking</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials Pre / Post test <i>pre/post with control group</i> Post test <i>post-test with control group and post-test with 1 group</i> Repeated Cross Sectional</p>	<p>Media Awareness Understanding</p> <p>Proximal Awareness/knowledge: dietary counselling helplines Awareness/knowledge: smoking cessation helplines</p> <p>Intermediate <i>None reported</i></p>

	<i>(adult smoking cessation, adult healthy diet, mammography, cervical cancer screening, control of cancer pain) that are effective in promoting behavior change; and (2) to identify evidence-based strategies that have been evaluated to disseminate these cancer control interventions.</i>				National	<i>cessation, tobacco sale to minors, prenatal/antenatal diets.</i> Range of study sample sizes <i>353-279681 from 4 studies, 4 not reported</i>	<i>interrupted time series</i> Unclear <i>'descriptive study'</i> Sub-group analysis <i>None reported</i>	Distal <i>None reported</i>
Gould (2013)³⁹ Low risk of bias Low relevance	Topic: Tobacco use Was Mass Media sole focus? Yes <i>Although sometimes referred to as 'media'. Some interventions may not meet our definition of mass media.</i> Aim of review <i>(a) to systematically</i>	Date range of included studies <i>1998-2011</i> (Date range of searches <i>Earliest to October 2011)</i>	Number of studies 11 relevant studies (of 20 included studies)	OECD countries: <i>Australia, New Zealand, USA</i>	Definition of Mass Media <i>search terms were communication media, or mass media or social marketing, or advertising or health promotion or internet or mobile phone or arts or arts therapy.</i> Characteristics of the mass media interventions collected by the reviewers	Target population Ethnicity: <i>Indigenous populations with Australia, New Zealand, USA and Canada including Australian Aboriginal or Torres Strait Islanders, NZ Maori, American Indians, Alaska Natives, Pacific</i>	Type of synthesis <i>Narrative synthesis using Popay's guidelines for narrative synthesis</i> Type(s) of studies synthesised RCTs / Trials Pre / Post test Post test Other <i>database analysis, mixed methods or qualitative</i> Sub-group analysis <i>None reported</i>	Media Recall Credibility Proximal Intention: to quit or smoke Awareness/knowledge: smoking Behaviour: information seeking Behaviour: treatment seeking Intermediate Behaviour: smoking uptake/quitting

	<p>review and summarise the literature describing attitudes and key responses (such as cognitions, awareness, recall, intentions to quit, quit rates) to culturally targeted anti-tobacco messages (in indigenous and First Nations populations in Australia, New Zealand, USA and Canada) and (b) identify any differences in effect according to whether the messages were addressed to the target population or aimed at the general population.</p>				<p>Components 8 tv/radio, 3 mobile phone, 4 print media, 2 internet, 1 cd rom, 1 video, 1 'edutainment' Target populations 7 studies described impact of interventions among youth, two addressed women, one aimed at pregnant women, two studies included health staff or health professionals Setting all studies were in community settings covering a range of urban, rural and remote locations</p> <p>Reach of included campaigns Local 4 National 6</p>	<p>Islanders, First Nations or Inuit</p> <p>Range of study sample sizes not reported</p>		<p>Distal None reported</p>
<p>Grilli (2000)⁴⁹</p> <p>Low risk of bias</p>	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? Yes</p>	<p>Date range of included studies 1979-1999</p> <p>(Date range of searches</p>	<p>Number of studies 2 relevant studies (of 21 included studies)</p>	<p>UK studies: 2</p>	<p>Definition of Mass Media Based upon the use of mass media, including radio, television, newspapers,</p>	<p>Target population Other: Health care providers, patients, and the general</p>	<p>Type of synthesis Narrative synthesis Results from individual studies addressing the same aspect of care were not pooled, due to</p>	<p>Media None reported</p> <p>Proximal Behaviour: Use of health services</p>

Low relevance	Aim of review <i>To assess the effects of mass media on the utilisation of health services</i>	<i>no restrictions up to 1996)</i>			<i>magazines, leaflets, posters and pamphlets (alone or in conjunction with other interventions);</i>	<i>public</i>	<i>the substantial heterogeneity in both the setting and subjects between studies.</i>	Intermediate <i>None reported</i>
					Characteristics of the mass media interventions collected by the reviewers Components	Range of study sample sizes <i>Not reported</i>	Type(s) of studies synthesised Observational / Correlational Pre / Post test	Distal <i>None reported</i>
					Reach of included campaigns National <i>2 UK-wide campaigns</i>		Sub-group analysis <i>None reported</i>	
Hemsing (2012)⁴¹	Topic: Tobacco use	Date range of included studies	Number of studies	UK studies: 1	Definition of Mass Media	Target population	Type of synthesis	Media
High risk of bias	Was Mass Media sole focus? No	<i>1994–2008 (relevant study 1994)</i>	1 relevant study (of 9 included studies)	OECD countries: <i>UK (1)</i>	<i>Not reported</i>	Other: <i>Pregnant women and their partners</i>	Narrative synthesis	<i>None reported</i>
Low relevance	Aim of review <i>To provide an analysis of a systematic review of the literature regarding interventions, which promote partner support for smoking cessation during pregnancy. The</i>	(Date range of searches <i>1990-May 2009)</i>			Characteristics of the mass media interventions collected by the reviewers Components Coverage/Reach of included campaigns Target populations Intervention Aim Setting Other <i>Source of funding</i>	Range of study sample sizes <i>Not reported.</i>	Type(s) of studies synthesised Pre / Post test <i>Before and after study</i>	Proximal <i>None reported</i>
							Sub-group analysis <i>None reported</i>	Intermediate Behaviour: quit attempts
								Distal <i>None reported</i>

<p><i>two primary research questions guiding the review are: 1. Do interventions that involve partners' support of their pregnant partners lead to effective smoking cessation among pregnant partners during pregnancy and postpartum? 2. Are there interventions that are effective in encouraging partners who smoke to stop smoking? Stemming from the second research question, the following subquestions are also assessed in relation to women's smoking cessation: 1. Do the intensity and modality of the intervention influence effectiveness? 2. Does effectiveness</i></p>				<p>Reach of included campaigns National <i>Described as including adverts in 6 tabloid newspapers therefore assumed to be a national campaign</i></p>			
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	<i>vary according to the education level and socioeconomic status (SES) of the target population?</i>							
<p>Hill (2014)⁴²</p> <p>High risk of bias</p> <p>Low relevance</p>	<p>Topic: Tobacco use</p> <p>Was Mass Media sole focus? No</p> <p><i>Six tobacco control interventions: price increases, smoke-free policies, advertising bans, mass media campaigns, warning labels, smoking cessation support and community-based programmes combining several interventions.</i></p> <p>Aim of review <i>To review and synthesise existing evidence on the equity impact of</i></p>	<p>Date range of included studies <i>2006-2011</i></p> <p>(Date range of searches <i>Jan 2006-Sep 2010)</i></p>	<p>Number of studies 12 relevant studies (of 77 included studies)</p>	<p>UK studies: 1</p> <p>OECD countries: USA (9), Holland (1), UK (1), Canada (1)</p>	<p>Definition of Mass Media <i>Not reported</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Components <i>Channels</i> Intervention Aim</p> <p>Reach of included campaigns Local</p>	<p>Target population Age: 18 years and over</p> <p>Range of study sample sizes <i>Not reported</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised <i>Not reported</i></p> <p>Sub-group analysis Socio-economic status</p>	<p>Media Awareness</p> <p>Proximal Behaviour: calls to quit-line</p> <p>Intermediate <i>None reported</i></p> <p>Distal <i>None reported</i></p>

	<p><i>tobacco control interventions by SES.</i></p> <p>Theoretical Framework <i>World Bank tobacco control strategies</i></p>							
<p>Kahn (2002)⁵⁸</p> <p>High risk of bias</p> <p>Low relevance</p>	<p>Topic: Physical activity</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review <i>The Guide to Community Preventive Services methods for systematic reviews were used to evaluate the effectiveness of various approaches to increasing physical activity: informational, behavioral and social, and environmental and policy approaches. Changes in</i></p>	<p>Date range of included studies <i>1980 and 2000</i></p> <p>(Date range of searches <i>1980-2000)</i></p>	<p>Number of studies 6 relevant studies (of 94 included studies)</p>	<p>UK studies: <i>point of decision prompts: 1 in England and 1 in Scotland</i></p> <p>OECD countries: <i>point of decision prompts: 4 in US, 2 in UK</i></p>	<p>Definition of Mass Media <i>Informational approaches to change knowledge and attitudes about the benefits of and opportunities for physical activity within a community</i></p> <p>Characteristics of the mass media interventions collected by the reviewers <i>Components Point of decision prompts: All interventions evaluated in this category were single-component interventions, in which placement of the sign was the only</i></p>	<p>Target population <i>Not reported</i></p> <p>Range of study sample sizes <i>Not reported</i></p>	<p>Type of synthesis <i>Narrative synthesis</i></p> <p>Type(s) of studies synthesised <i>RCTs / Trials Mass Media - 1 non-randomised trial Pre / Post test Mass media 1 pre post design Repeated Cross Sectional Point of decision prompts All studies were of moderate suitability, using time-series designs. Mass Media Time series design</i></p> <p>Sub-group analysis <i>Race/Ethnicity Weight status</i></p>	<p>Media <i>None reported</i></p> <p>Proximal <i>None reported</i></p> <p>Intermediate <i>Behaviour: increased physical activity</i></p> <p>Distal <i>None reported</i></p>

<p><i>physical activity behavior and aerobic capacity were used to assess effectiveness. ● What interventions are effective in increasing or maintaining levels of physical activity in populations? ● What interventions in current use are ineffective, inefficient, or potentially harmful? We have only included data for the point of decision prompts since the Brown study updates the mass media synthesis.</i></p> <p>Theoretical Framework <i>conceptual model in figure 1 page 76 “This framework illustrates the relationships between physical</i></p>				<p><i>intervention activity.</i></p> <p>Reach of included campaigns Local <i>Point of decision prompts</i></p>			
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<p><i>activity, several indicators of physical fitness, and morbidity and mortality outcomes. ... The logic framework also shows the means by which interventions are thought to be effective." The authors categorise the modifiable determinants of behaviour: 1) information-based determinants (e.g. knowledge and attitudes about physical activity and behaviours that precede physical activity; motivations to be active; and intentions to engage); 2) social and behavioural skills that facilitate the adoption and maintenance of physical activity behavioural change; and 3)</i></p>							
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	<i>environmental characteristics (e.g. safe and accessible parks and recreation facilities) that increase the possibility and likelihood of physical activity occurring."</i>							
Kesterton (2010)⁵⁰ High risk of bias Low relevance	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review <i>This review investigates the effectiveness of interventions aimed at generating demand for and use of sexual and reproductive health (SRH) services by young people; and interventions aimed at generating wider community</i></p>	<p>Date range of included studies 2001</p> <p>(Date range of searches <i>Not before 1990)</i></p>	<p>Number of studies 3 relevant studies (of 74 included studies)</p>	<p>Non-OECD countries: <i>Zimbabwe 2, Burkina Faso 1</i></p>	<p>Definition of Mass Media <i>Not reported</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Components</p> <p>Reach of included campaigns Local <i>community based</i> Regional <i>cities and centres of small towns in rural areas</i></p>	<p>Target population Age: <i>Programmes targeting young people</i></p> <p>Other: <i>Programmes targeting communities to improve their support for young people's services</i></p> <p>Range of study sample sizes <i>1400 (reported for 1 study)</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised RCTs / Trials <i>quasi experimental - 2</i> Pre / Post test</p> <p>Sub-group analysis <i>None reported</i></p>	<p>Media Interaction: discussion of campaign or message with others</p> <p>Proximal Awareness/knowledge: how to access services Behaviour: Use of health centre</p> <p>Intermediate <i>None reported</i></p> <p>Distal <i>None reported</i></p>

	<i>support for their use.</i>							
<p>LaCroix (2014)⁵¹</p> <p>Low risk of bias</p> <p>Low relevance</p>	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? Yes</p> <p>Aim of review <i>This meta-analysis was conducted to synthesize evaluations of mass media-delivered HIV prevention interventions, assess the effectiveness of interventions in improving condom use and HIV-related knowledge, and identify moderators of effectiveness.</i></p>	<p>Date range of included studies <i>1986–2010</i></p> <p>(Date range of searches <i>searches in 2013)</i></p>	<p>Number of studies 54 relevant studies (of 54 included studies)</p>	<p>Continents <i>: Africa 27, Asia 9, Europe 6, United States 6, South/Central America 5, Australia 1</i></p>	<p>Definition of Mass Media <i>evaluated a specific intervention delivered through an audio, visual, or printed mass media channel in a natural setting, had an HIV/AIDS prevention focus Interventions that solely targeted high-risk groups (eg, injection drug users, commercial sex workers), used forced exposure to messages, only sampled individuals who had all been exposed to some campaign component, or used interpersonal communication supplemented by small media (eg, brochures delivered by outreach workers) were excluded.</i></p> <p>Characteristics of the mass media</p>	<p>Target population Age: <i>youth</i> Other: <i>general population</i></p> <p>Range of study sample sizes <i>range of sample pre intervention - 53–6000 range of sample post intervention - 47–6000</i></p>	<p>Type of synthesis Meta-analysis</p> <p>Type(s) of studies synthesised Pre / Post test</p> <p>Sub-group analysis Age Gender Pre-campaign behaviour</p>	<p>Media <i>None reported</i></p> <p>Proximal Awareness/knowledge: HIV prevention & transmission</p> <p>Intermediate <i>None reported</i></p> <p>Distal <i>None reported</i></p>

					<p>interventions collected by the reviewers Theoretical framework Components Duration of the programme <i>range 1–1456</i> Intervention Aim Other <i>condom demonstration / condom distribution</i></p> <p>Reach of included campaigns Local <i>community based</i> Regional <i>state or province wide</i> National</p>			
<p>Matson-Koffman (2005)⁶⁰</p> <p>Low risk of bias</p> <p>Low relevance</p>	<p>Topic: Physical activity</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review "To review selected and recent environmental</p>	<p>Date range of included studies <i>1995-2001</i></p> <p>(Date range of searches <i>1970 - Oct 2003)</i></p>	<p>Number of studies 7 relevant studies (of 64 included studies)</p>	<p>UK studies: <i>1 England + 1 Scotland</i></p> <p>OECD countries: <i>USA, UK</i></p>	<p>Definition of Mass Media <i>Not reported, however review excluded media-only campaigns</i></p> <p>Characteristics of the mass media interventions collected by the reviewers</p>	<p>Target population <i>No target defined</i></p> <p>Range of study sample sizes <i>5,050 - 115,113</i></p>	<p>Type of synthesis Narrative synthesis</p> <p>Type(s) of studies synthesised Other <i>Categorised as "quasi-experimental" and "nonexperimental"</i></p>	<p>Media <i>None reported</i></p> <p>Proximal <i>None reported</i></p> <p>Intermediate Behaviour: increased stair use</p> <p>Distal <i>None reported</i></p>

<p><i>and policy interventions designed to increase physical activity and improve nutrition as a way to reduce the risk for heart disease and stroke, promote CVH, and summarize recommendations. " "For this review, we defined environmental interventions as those strategies that involve changing the physical surroundings and social, economic, or organizational systems in order to promote individual behavior change. The focus of these interventions is on structural changes in the environment rather than individual-level approaches (e.g.,</i></p>				<p>Components Duration of the programme Scope Setting</p> <p>Reach of included campaigns Local <i>Cities/communities</i> Regional <i>States/counties</i></p>		<p>Sub-group analysis <i>None reported</i></p>	
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	<p><i>small-group educational sessions). ... Policies, which may be used to bring about environmental change, can be either legislative/regulatory or organizational."</i> [RQs not specified]</p> <p>Theoretical Framework <i>Social Ecological Model</i></p>							
<p>Mozaffarian (2012)⁶⁸</p> <p>Low risk of bias</p> <p>Low relevance</p>	<p>Topics: Multiple – diet, physical activity, tobacco use</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review <i>To identify and assess the evidence for the effectiveness of population approaches in changing dietary, physical activity,</i></p>	<p>Date range of included studies <i>1987-2010</i></p> <p>(Date range of searches not reported)</p>	<p>Number of studies 31 relevant studies (22 <i>media and educational campaign intervention studies + 3 Multicomponent Interventions (Including Major Components Beyond Media and Education); 6</i></p>	<p>UK studies: 2</p> <p>OECD countries: <i>US, Finland, Australia, Great Britain</i></p> <p>Non-OECD countries: <i>Singapore, Mauritius, China, Pakistan,</i></p>	<p>Definition of Mass Media <i>"Media and Education Campaigns" category. From the results (p1520) "A variety of media have been used, including television, radio, print, or billboard advertising; in-store media education; and leaflets mailed or delivered door-to-door. Interventions that simply provided information on or</i></p>	<p>Target population <i>No target defined</i></p> <p>Range of study sample sizes <i>n=374 to the US population</i></p>	<p>Type of synthesis <i>Narrative synthesis</i></p> <p>Type(s) of studies synthesised <i>RCTs / Trials cluster-randomized trials (diet) Unclear Unclear for the PA and tobacco studies Other ecological studies, quasi-experimental studies (diet)</i></p> <p>Sub-group analysis <i>Duration of</i></p>	<p>Media <i>None reported</i></p> <p>Proximal <i>Awareness/knowledge: healthy diets Awareness/knowledge: physical activity Attitudes: physical activity Attitudes: smoking</i></p> <p>Intermediate <i>Behaviour: smoking prevention & cessation</i></p>

<p><i>or tobacco use habits and related health outcomes. Population strategies were considered in 6 broad domains: (1) Media and educational campaigns; (2) labeling and consumer information; (3) taxation, subsidies, and other economic incentives; (4) school and workplace approaches; (5) local environmental changes; and (6) direct restrictions and mandates. [RQs not specified]</i></p> <p>Theoretical Framework <i>CDC Evaluation Framework (Ref #37: Framework for program evaluation in public health. MMWR Recomm</i></p>		<p><i>point-of-decision stairs prompt studies (in Labelling and Consumer Information Category)) (of ~100 (not stated) included studies)</i></p>	<p><i>US-Mexico border</i></p>	<p><i>near products, such as food labels, menu labeling, stair signage, or warning labels on tobacco products, were considered separately ("Labeling and Consumer Information")."</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Components Duration of the programme Target populations Setting</p> <p>Reach of included campaigns Local <i>population=communities or neighbourhoods</i> Regional <i>Targets whole US state</i> National <i>Target whole country</i></p>		<p>intervention <i>Sustained vs. shorter-term</i></p>	<p>Behaviour: consumption of healthy food Behaviour: increases in physical activity Behaviour: stair use</p> <p>Distal <i>None reported</i></p>
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	<i>Rep. 1999;48:1–40.)</i>							
Ogilvie (2007)⁶¹ Low risk of bias Low relevance	Topic: Physical activity Was Mass Media sole focus? No Aim of review <i>To conduct a systematic review of the best available evidence across all relevant disciplines to determine what characterises interventions effective in promoting walking; who walks more and by how much as a result of effective interventions; and the effects of such interventions on overall physical activity and health.</i>	Date range of included studies <i>2002-2005</i> (Date range of searches <i>1990-2007)</i>	Number of studies 2 relevant studies (of 48 included studies)	OECD countries: <i>2 USA</i>	Definition of Mass Media <i>Not reported</i> Characteristics of the mass media interventions collected by the reviewers Components <i>"mass media campaigns augmented by community events and other local supportive measures"</i> (p4) Duration of the programme Target populations Reach of included campaigns Local	Target population <i>No target defined</i> Range of study sample sizes <i>study population range: 173 (Reger-Nash (Wheeling) study) to 730 (Reger-Nash (Welch) study)</i>	Type of synthesis <i>Narrative synthesis includes forest plots showing each study, (visually represents each study in relation to the others) but no overall analysis</i> Type(s) of studies synthesised <i>Unclear non randomised studies.</i> Sub-group analysis <i>None reported</i>	Media <i>None reported</i> Proximal <i>None reported</i> Intermediate Behaviour: <i>increased time spent walking</i> Distal <i>None reported</i> Process outcomes <i>Intervention costs</i>
Speizer (2003)⁵²	Topic: Sexual health	Date range of included studies	Number of studies 6 relevant	Non-OECD countries: <i>1 in</i>	Definition of Mass Media <i>not reported</i>	Target population Age:	Type of synthesis Narrative synthesis	Media Awareness Exposure

<p>High risk of bias</p> <p>Low relevance</p>	<p>Was Mass Media sole focus? No</p> <p>Aim of review <i>Until recently, however, few rigorous impact assessments had been undertaken, and their effectiveness has been largely undocumented. Fortunately, the number of interventions that have undergone rigorous evaluations has increased significantly during the last decade, and in this article we review and synthesize this emerging body of evidence with an eye toward advancing our understanding of “what works” in ARH programming in developing countries.</i></p>	<p><i>All but a few of these studies were undertaken after 1990, with the bulk being undertaken during the 1995–2001 period.</i></p> <p>(Date range of searches not reported)</p>	<p>studies (of 41 included studies)</p>	<p><i>Paraguay, 5 in Sub Saharan Africa</i></p>	<p>Characteristics of the mass media interventions collected by the reviewers Components Duration of the programme Target populations Other <i>social marketing of condoms, education sessions, peer counselling.</i></p> <p>Reach of included campaigns Local <i>1 in Soweto</i> National <i>3 national campaigns in Botswana, Cameroon, Guinea</i></p>	<p><i>adolescents (aged 10–19 years) or young adults (aged 20–24 years)</i></p> <p>Range of study sample sizes <i>226 to 2396</i></p>	<p>Type(s) of studies synthesised RCTs / Trials <i>quasi - experimental trials - repeat cross sectional studies with control groups - 1 without control group</i></p> <p>Sub-group analysis <i>None reported</i></p>	<p>Interaction: discussion of campaign or message with others</p> <p>Proximal Awareness/knowledge: reproductive health Attitudes: reproductive health Behaviour: use of clinic</p> <p>Intermediate Behaviour: increased condom use</p> <p>Distal <i>None reported</i></p>
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<p>Sweat (2012)⁵⁴</p> <p>Low risk of bias</p> <p>Low relevance</p>	<p>Topic: Sexual health</p> <p>Was Mass Media sole focus? No</p> <p>Aim of review <i>To examine the relationship between condom social marketing programmes and condom use.</i></p>	<p>Date range of included studies <i>The 6 mass media studies conducted between 1995 and 2008</i></p> <p>(Date range of searches studies published between January 1990 and March 2010)</p>	<p>Number of studies 6 relevant studies (of 11 included studies)</p>	<p>Non-OECD countries: <i>India - 1, Sub Saharan Africa - 5</i></p>	<p>Definition of Mass Media <i>We began by defining condom social marketing as including interventions in which condoms were sold, a local brand name was developed for the condoms, and the condoms were marketed through a promotional campaign to increase sales.</i></p> <p>Characteristics of the mass media interventions collected by the reviewers Components Duration of the programme <i>In the four serial cross-sectional studies, follow-up ranged from 12 to 36 months, and</i> Target populations</p> <p>Reach of included campaigns National</p>	<p>Target population <i>No target defined</i></p> <p>Range of study sample sizes <i>Serial cross-sectional studies: baseline range: 928–2401, follow-up range: 200–3370. Cross-sectional studies: range 9803 to 541212.</i></p>	<p>Type of synthesis Meta-analysis</p> <p>Type(s) of studies synthesised Observational / Correlational Pre / Post test Other <i>4 studies: serial cross-sectional design to compare outcomes before and after the intervention, with random selection of study participants [13–16].</i> <i>1 study: single cross-sectional design to compare provinces where condom social marketing programmes had operated for 18 months vs <6 months [12].</i> <i>1 study: cross-sectional design examined condom use by measuring intervention exposure.[17]</i> <i>1 study: baseline assessment sites differed from</i></p>	<p>Media <i>None reported</i></p> <p>Proximal <i>None reported</i></p> <p>Intermediate Behaviour: condom use – most recent sex encounter Behaviour: condom use – all condom use</p> <p>Distal <i>None reported</i></p>
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					Two studies were described as national in scope.		"similar" follow-up assessment sites [14].	
							Sub-group analysis Gender	
Werb (2013)⁶⁴	Topic: Illicit drug use	Date range of included studies	Number of studies	OECD countries:	Definition of Mass Media	Target population	Type of synthesis	Media
Low risk of bias	Was Mass Media sole focus?	1992-2011, relevant study published 2007	1 relevant study (of 8 included studies)	7 (1 relevant study is from Canada)	<i>Not reported</i>	Other: "For the purposes of this review, drug users at risk were defined as those who had never injected drugs or were classified as non-injectors within studies."	Narrative synthesis Descriptive summary of included studies and some learning across the studies in the discussion	<i>Awareness</i> <i>Attitudinal response</i>
Low relevance	Aim of review	(Date range of searches		Non-OECD countries:	Characteristics of the mass media interventions collected by the reviewers		Type(s) of studies synthesised	Proximal
	"We therefore sought to systematically search the existing peer-reviewed scientific literature in order to identify and assess interventions to prevent the initiation of injection drug use."	Inception to 1st June 2012)		1 from Uzbekistan and Kyrgyzstan	Theoretical framework Relevant study - "social marketing intervention to prevent injecting initiation" Duration of the programme two and a half months Coverage/Reach of included campaigns "Data from in-depth qualitative interviewing suggested that campaign penetration was high" Target populations		RCTs / Trials 2 irrelevant studies Cohort / Longitudinal study 3 irrelevant studies Repeated Cross Sectional 2 lagged cross-sectional Other Relevant study: "Data from in-depth qualitative interviewing suggested that campaign penetration was high, and the vast majority of study participants (84–93%) agreed	<i>None reported</i>
						Range of study sample sizes		Intermediate
						<i>Not reported</i>		<i>None reported</i>
								Distal
								<i>None reported</i>

				<p><i>"Montreal street youth"</i> Setting <i>"61 participating establishments catering to street youth in Montreal"</i></p> <p>Reach of included campaigns Local <i>One relevant study used targeted dissemination of addiction-themed posters to Montreal street youth over the period of two and a half months. Combined with public postering around 61 participating establishments catering to street youth in Montreal.</i></p>		<p><i>with the statement that the posters were effective in preventing young people from initiating injection (Roy et al., 2007)."</i></p> <p>Sub-group analysis None reported</p>	
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Appendix 5 Rapid review of reviews of the cost-effectiveness example search strategy (Review C)

A literature search was conducted to identify reviews not identified in the original review of reviews search.

Web of Science

Searched on 17 January 2017.

Combined with *OR*:

TOPIC: (mass media) *AND* **TOPIC:** (economic evaluation) *AND* **TOPIC:** (review)

TOPIC: (mass media) *AND* **TOPIC:** (cost-effectiveness) *AND* **TOPIC:** (review)

TOPIC: (mass media) *AND* **TOPIC:** (cost-effectiveness) *AND* **TOPIC:** (review) *AND* **TOPIC:** (tobacco)

TOPIC: (mass media) *AND* **TOPIC:** (cost-effectiveness) *AND* **TOPIC:** (review) *AND* **TOPIC:** (alcohol)

TOPIC: (mass media) *AND* **TOPIC:** (cost-effectiveness) *AND* **TOPIC:** (review) *AND* **TOPIC:** (diet)

TOPIC: (mass media) *AND* **TOPIC:** (cost-effectiveness) *AND* **TOPIC:** (review) *AND* **TOPIC:** (drugs)

TOPIC: (mass media) *AND* **TOPIC:** (cost-effectiveness) *AND* **TOPIC:** (review) *AND* **TOPIC:** (physical activity)

TOPIC: (mass media) *AND* **TOPIC:** (cost-effectiveness) *AND* **TOPIC:** (review) *AND* **TOPIC:** (sexual health)

Google scholar

Searched on 17 January 2017.

mass media cost-effectiveness review

mass media economic evaluation review

Appendix 6 Review of recent UK primary studies example search strategy (Review D)

Medline (Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present)

Searched via Ovid interface on 9 September 2016.

#	Searches
1	exp Mass Media/
2	exp Communications Media/
3	exp Social Media/
4	exp Health Promotion/
5	Pamphlets/
6	exp Serial Publications/
7	Electronic Mail/
8	media.ab,ti.
9	mass communication?.ab,ti.
10	social marketing.ab,ti.
11	"broadcast*".ab,ti.
12	advert*.mp.
13	campaign*.mp.
14	health campaign*.mp.
15	mass media.mp.
16	communications media.mp.
17	social media.mp.
18	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19	Diet/
20	diet.mp.
21	nutrition.mp.
22	eating.mp.
23	calorie*.ab,ti.
24	fruit.ab,ti.
25	vegetable?.ab,ti.
26	over-eating.ab,ti.
27	fast food.ab,ti.
28	food preferences.ab,ti.
29	healthy eating.ab,ti.
30	unhealthy eating.ab,ti.
31	(fat adj9 food).ab,ti.
32	Street Drugs/
33	Designer Drugs/
34	(illicit adj1 drug\$).mp.
35	(illicit adj1 substance\$).mp.
36	(substance\$ adj1 us*).mp.
37	(substance\$ adj1 misus*).mp.
38	(drug\$ adj1 us*).mp.

39 (drug\$ adj1 misus*).mp.
 40 Exercise/
 41 Motor Activity/
 42 (physical* adj1 activ*).mp.
 43 (physical* adj1 fitness).mp.
 44 (physical* adj1 exertion).mp.
 45 (activ* adj1 travel*).mp.
 46 exercise.ti,ab.
 47 sport*.ti,ab.
 48 exp Sexual Behavior/
 49 Sexually Transmitted Disease/
 50 Sexual Health/
 51 Sex.mp.
 52 Tobacco/
 53 Smoking/
 54 tobacco.mp.
 55 smoking.mp.
 56 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33
 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or
 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55
 57† exp Great Britain/
 58 ("united king*" or uk or "U.K." or "UK." or "U.K" or britain).ab,in,ti.
 59 (british or english or scottish or welsh or irish).ab,in,ti.
 60 (scotland or ireland).ab,in,ti.
 61 (england not "new england").ab,in,ti.
 62 (wales not "new south wales").ab,in,ti.
 63 (london or manchester or birmingham or leeds or sheffield or liverpool or newcastle
 or edinburgh or glasgow or cardiff or oxford or bristol).ab,in,ti.
 64 ((london adj2 ontario) or (london adj on) or new london).ab,in,ti.
 65 (manchester adj3 (USA or massach*)).ab,in,ti.
 66 (newcastle adj4 (australia* or "new south wales" or nsw)).ab,in,ti.
 67 (liverpool adj4 (australia* or "new south wales" or nsw)).ab,in,ti.
 68 64 or 65 or 66 or 67
 69 63 not 68
 70 (nhs or "national health service").ab,in,ti.
 71 57 or 58 or 59 or 60 or 61 or 62 or 69 or 70
 72 18 and 56 and 71
 73 limit 72 to ed=20110901-20160831
 74 limit 73 to yr="2011-2016"

†Source of lines 57-71: Wright J (2010). UK studies search filters. Academic Unit of Health Economics, University of Leeds; unpublished.

Appendix 7 Characteristics of included recent UK primary studies (Review D)

Study Quality rating*	Study topic and aim	Mass media intervention	Sample and study design	Sub-group analyses	Types of outcomes - Media outcomes - Proximal outcomes - Intermediate outcomes - Distal outcomes - Process outcomes
<p>Ayers (2012)¹³⁴</p> <p>EPHPP: 2 Moderate</p>	<p>Health Topic Alcohol use</p> <p>Aim of study <i>To investigate “whether watching an anti-drinking scenario which included blame and severity components would affect comparative optimism judgements, using two experimental conditions, imagine and watch, ... It was hypothesized that participants in the watch and imagine conditions would exhibit less comparative optimism for alcohol-related events (having an</i></p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim <i>anti-binge drinking - targeted having an accident when under the influence of alcohol</i> Duration of the programme <i><1 minute ad [broadcast 2006-2007]</i> Dose intensity <i>The ad had aired on UK national TV, although at the time of the experiment was not currently being aired. It was played once for 2 of 3 experimental conditions.</i> Scope <i>national</i> Target populations <i>binge/heavy episodic drinkers</i></p> <p>Components Channels <i>TV</i></p>	<p>Study country England <i>Uxbridge, Middlesex</i></p> <p>Sample size <i>n=124 students from Brunel University who drank alcohol between 1 and 7 times per week (mean = 4.76, SD = 2.66) and drank between 1 and 20 units of alcohol per episode (mean = 5.65, SD = 3.8). 48 males and 75 females, aged between 18 and 30 years (mean = 21.94, SD = 3.57).</i></p> <p>Date of data collection Not reported</p> <p>Study design RCTs / Trials <i>A between-participants experimental design. Sample randomly assigned to 1 of 3 conditions (1. questionnaire only, 2.</i></p>	<p>Sub-group analyses Age Gender Other <i>alcohol drinking behaviour</i></p>	<p>Media outcomes <i>None reported</i></p> <p>Proximal outcomes Social cognitive: Beliefs</p> <p>Intermediate outcomes <i>None reported</i></p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>

	<p><i>accident, unprotected sex, car accident and cirrhosis) compared with a control condition. ... it was further hypothesized that participants in the imagine condition would exhibit less comparative optimism for having an accident, compared with the watch condition. This was because having an accident due to drinking alcohol is the target behaviour in the anti-binge drinking scenario used in the current study.” (p53)</i></p> <p>Was Mass Media sole focus? Yes</p>	<p>Messages "Severity (of consequences, falling and badly injured or dead) and blame (due to heavy drinking) are clearly part of the scenario" (p53) Source funded by the UK Department of Health and the Home Office Branding Know Your Limits</p>	<p><i>watch alcohol ad, 3. watch alcohol ad and told "to imagine that it is personal and involves you") before completing a post-exposure survey.</i></p> <p>Data collection method Survey Participants gave informed consent. The study was completed in a 'quiet testing room'. Participants watched the video clip of the ad (not currently aired at the time of the experiment) on a PC then turned over the questionnaire to complete it. Measures included comparative optimism (The questions were: 'compared to the average student of the same age and gender, with similar drinking behaviours, how likely do you think you are:' (a) 'To be involved in an accident due to your drinking'? (b) 'To have unprotected sex under the influence of alcohol'? (c) 'To be involved in a road traffic accident due to your drinking? (drivers only). (d) To develop cirrhosis of the liver? Ratings, and subsequent scoring, were on a 5-point scale), demographic info and whether they held a driving licence. Afterwards, they were fully debriefed.</p>		
<p>Brown (2014c)¹²⁰ OCCS: good</p>	<p>Health Topic Tobacco use</p>	<p>Campaign setting England Other</p>	<p>Study country England</p>	<p>Sub-group analyses Age</p>	<p>Media outcomes <i>None reported</i></p>

	<p>Aim of study To answer "three research questions: (i) How effective was Stoptober in promoting quit attempts? [assessed by the increase in national quit attempt rate in October relative to other months in 2012 vs. 2007–2011.]; (ii) How costeffective was Stoptober in terms of cost per life year gained?; and (iii) What was the public health impact of Stoptober in terms of total life years it is expected to gain?"</p> <p>Was Mass Media sole focus? Yes</p>	<p><i>Likely UK shared-media channels "survey only measured additional quitting in England, and although the campaign only targeted England directly, there was almost certainly a positive related effect of the campaign on quitting in other countries of the United Kingdom" (p57)</i></p> <p>Characteristics Campaign aim <i>"Stoptober' encouraged smokers to join a mass quit attempt on October 1st 2012 and stay smoke-free throughout October with a variety of support including digital to help them achieve success."</i> Theoretical framework 3 psychological principles: 1. "the proposal from SOCIAL CONTAGION THEORY that one can use messaging to amplify a campaign by normalising a behaviour and turning it into a movement"; 2. "the use of a SMART (Specific, Measurable, Attainable, Realistic and Time-sensitive) goal"; 3. "PRIME THEORY is a comprehensive theory of motivation that argues behaviour is determined on a moment-to-moment basis by a wide variety of motivational inputs ... the motivational system is inherently unstable and requires constant balancing input to maintain a constant pattern of behaviour." Basis of programme design</p>	<p>Sample size <i>n=31,566 adult (≥16) past-year smokers</i></p> <p>Date of data collection 2007-2012</p> <p>Study design Repeated Cross Sectional <i>"examining the percentage of smokers reporting a past-month quit attempt in a series of monthly cross-sectional household surveys of representative samples of the population of adults in England between 2007 and 2012"</i></p> <p>Data collection method Survey <i>"a face-to-face computer-assisted survey with a trained interviewer" (p54)</i></p>	<p>Gender Socio-economic status Time</p>	<p>Proximal outcomes <i>None reported</i></p> <p>Intermediate outcomes Behavioural: attempt to change behaviour</p> <p>Distal outcomes Improvement in population health status</p> <p>Process outcomes Cost effectiveness data</p>
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		<p><i>“The stimulus for the campaign was twofold: first was the observation that ‘No Smoking Day’ which takes place every year in March throughout England had been shown to generate an estimated 238,000 attempts to stop in a population of 8.5 million smokers, at a cost of around £750,000 (Kotz et al., 2011). ... It is a national event that aims to help smokers stop by providing a nationally supportive environment and drawing attention to available treatments. Secondly, it was noticed that Autumn (Fall) in England was a fallow period for quitting activity (West and Brown, 2013a). This led to the idea of a national cessation campaign to generate a burst of activity around that time.” (p52-3)</i></p> <p><i>Duration of the programme month of October</i></p> <p><i>Scope National campaign in England</i></p> <p><i>Target populations All smokers</i></p> <p><i>Cost “The known costs of Stoptober provided by the Department of Health were £5.8 million. The breakdown of those costs were as follows: Media advertising (television, radio, press, digital, outdoor, media partnerships) £3380,000; Public relations activity £70,000; Local and regional activation of the campaign among participating organisations including the national</i></p>			
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		<p><i>Stop Smoking Services £500,000; Fees for development and fulfilment of all creatives and products including advertising, website, and digital tools £1820,000; Follow on communications £30,000." (p54)</i></p> <p>Components</p> <p>Channels <i>"The campaign was broadcast through a combination of traditional and new mass media including TV, press, radio and online adverts, public relations messaging, and Facebook and Twitter activity." (p53)</i></p> <p>Channel Interactivity <i>"a peer support via Facebook, a motivational text-messaging programme and an app that aimed to provide ongoing encouragement and self-monitoring tools."</i></p> <p>Messages <i>"(i) frequent positive messaging encouraging smokers to stop, and (ii) providing an opportunity to do so at the same time as others" "The call to action was reinforced by the positive messages that smokers achieving this goal would be at least five times more likely than they were at the start to become permanent ex-smokers as a result of having recovered from the worst of the cravings and withdrawal symptoms"</i></p> <p>Targeting strategies <i>Included "Local and regional activation</i></p>			
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		<p><i>of the campaign among participating organisations including the national Stop Smoking Services"</i></p> <p>Branding</p> <p><i>Not described as a brand, but "The campaign was named 'Stoptober', as a combination of Stop and October, and was designed to build wide engagement with the event from association with other positive, popular national events that have successfully used similar monikers (e.g., 'Movember') and to encourage easy dissemination" (p53)</i></p> <p>Other support materials</p> <p><i>"Support tools to help smokers achieve a smoke-free month included a postal quitting pack and range of digital tools including an accompanying website that offered brief advice on smoking cessation, motivational text-messaging and an app to provide ongoing support and self-monitoring tools."</i></p>			
<p>Brown (2016)¹³⁶</p> <p>EPHPP: 1 Strong</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>We evaluated an online film documenting the experiences of smokers who recorded the first month of their successful attempts to quit</i></p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim <i>Thus the current study addressed the question of whether a novel online motivational film designed to boost motivation and self-efficacy and provide role-models to promote ex-smoker identities was effective in promoting quit attempts in the general</i></p>	<p>Study country UK (no further breakdown)</p> <p>Sample size <i>individual assignment to a no-intervention control (n = 1016), an informational film (n = 1004), or 4Weeks2Freedom (n = 999). Participants were adults (aged 18 and over) from the United Kingdom</i></p>		<p>Media outcomes Social cognition: Exposure</p> <p>Proximal outcomes Behavioural :Treatment seeking</p> <p>Intermediate outcomes Behavioural:</p>

	<p><i>(4Weeks2Freedom). The film was designed to boost motivation and self-efficacy and provide role-models to promote exsmoker identities.</i></p> <p>Was Mass Media sole focus? Yes</p>	<p><i>population of smokers. Theoretical framework PRIME Theory has many components but in this case the one that was considered most relevant was the idea that one could create a momentary desire and therefore intention to stop smoking by creating a vivid positive image of what it would be like in a way that smokers could identify with. If identification with smokers attempting to quit is successful, it may boost desire to quit both in terms of creating a positive image and also boosting self-confidence in success. These constructs were operationalized as video diaries of smokers who were going through the process with the knowledge that they met their challenge of stopping for 4 weeks as a springboard to lasting cessation. Basis of programme design Early versions of the film were refined on the basis of focus-group testing with a diverse group of smokers. Duration of the programme The final film consisting of both the diaries and the analysis was 90 minutes. Showing how people can quit over 4 weeks Scope national Target populations Adults (>=18 years) who smoked cigarettes (including hand-rolled) daily or occasionally</i></p>	<p>Date of data collection <i>between February and March 2014</i></p> <p>Study design RCTs / Trials</p> <p>Data collection method Survey <i>Measures recorded for outcome assessment at the 4-week endpoint were: selfreport of a serious attempt to quit smoking permanently in the previous 4 weeks and, among those who attempted to stop, whether nonsmoking was continued since the start of the attempt to the time of the survey, and which (if any) smoking cessation aids were used (see list in Supplementary Materials).Additionally, those allocated to either the informational control film or 4Weeks2Freedom condition were asked whether they had viewed the film, and those who reported having seen it were asked to indicate their satisfaction with their respective films on four dimensions: participants were asked to provide “yes” or “no” responses on whether they (1) found it to be helpful, (2) personally relevant, (3) would recommend it to others, and (4) use it in the future.</i></p>	<p>Attempt to change behaviour</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>
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		<p>Cost 'low cost'</p> <p>Components Channels <i>online film</i> Messages <i>The aim of this advice was to encourage those who made a quit attempt to use support that would give the highest probability of success. The testimonial content (video diaries) recorded by the five successful smokers was edited to provide material judged by the production team to be likely to boost motivation and self-efficacy by providing positive role modeling that promoted an ex-smoker identity.</i> Branding <i>4weeks2freedom</i> Other support materials <i>other support materials were promoted but not provided.</i></p>			
<p>Capacci (2011)¹³⁷ OCCS: Good</p>	<p>Health Topic Diet</p> <p>Aim of study <i>We provide an ex-post assessment of the UK 5-a-day information campaign, where the positive effects of information are disentangled from potentially conflicting</i></p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim <i>The ultimate objective of the program is to reach 5 portions of fruit and vegetables per day for the wholeUKpopulation by the year 2015, with intermediate objectives of 4 (by 2005) and 4.5 (by 2010). Specific targets of the campaign are younger</i></p>	<p>Study country UK (no further breakdown)</p> <p>Sample size <i>27501 roughly 7,000 samples over 4 years from 2002 to 2006</i></p> <p>Date of data collection <i>2002/03 to 2005/06</i></p> <p>Study design Other</p>	<p>Sub-group analyses Socio-economic status</p>	<p>Media outcomes <i>None reported</i></p> <p>Proximal outcomes <i>None reported</i></p> <p>Intermediate outcomes Behavioural: Behaviour change</p>

	<p><i>price dynamics.</i></p> <p>Was Mass Media sole focus? Yes <i>sole focus of this study although the campaign had other elements - not described.</i></p>	<p><i>and lower-income population groups, although the objectives for these groups are lower (4.1 and 4.5 portions by 2015, 3.2 and 3.5 by 2005 for routine and semi-routine workers, males and females, respectively).</i></p> <p><i>Duration of the programme April 2003 - 2015 (study period 2003 - 2006) March 2003 to December 2006 (mini campaign relaunched every 6 months: in Jan-Jun 2004, Jul-Dec 2004, Jan-Jun 2005, Jul-Dec 2005 and Jan-Dec 2006)</i></p> <p><i>Scope national</i></p> <p><i>Target populations</i></p> <p><i>Mini-relaunch targeted at mothers in younger and older families in lower-socio-economic groups Mini-relaunch targeted at teenage boys and girls living at home Mini-relaunch aimed at older children (7-11) in lower socio-economic groups Mini-relaunch targeted at independent young men and women Younger children in lower socio-economic groups Consumers: General UK population however, specifically younger and lower-income population groups (target number of portion were lower than 5-a-day for routine and semi-routine workers, males and females in these groups).</i></p> <p><i>Commercial: market agents and commercial partners (grocery retail brands, some fast-food outlets, caterers and food manufacturers).</i></p>	<p><i>modelling using secondary analysis</i></p> <p>Data collection method</p> <p>Survey <i>EFS data are collected from a sample of households in the UK using self-reported diaries of all purchases, including food, over a 2-weeks period" (p93)</i></p> <p>Other <i>secondary data - food diaries</i></p>		<p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>
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		<p>Cost <i>Planned budget for 2003–2006 was around £1.5m/year, although average actual spending was less than £1/m/year (budget spent 2003: £1,026,000; 2004: £904,000; 2005: £923,000).</i></p> <p>Components Channels <i>radio, TV online</i> Channel Interactivity <i>on-line and interactive marketing" for the campaign mini-relaunches targeted at teenage boys and girls living at home and targeted at older children (7–11) in lower socio-economic groups</i> Messages <i>An over-arching theme for the campaign was based on the proposition "Helping you to enjoy the benefits of eating more fruit and vegetables", which was then tailored in different forms depending on target groups.</i> Targeting strategies <i>The information campaign does not target consumers only, but also all market agents who might contribute to the success of the policy (marketing partners and non-commercial partners). The national campaign has started the development of a logo and portion indicator, whose license can only be granted by the Department of</i></p>			
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		<p><i>Health to products, which meet a set of nutritional criteria (e.g. related to their fat, sugar, and salt contents). The campaign has been initially based on publicly funded messages targeted to consumers, but with a medium-term aim that the commercial partners would take up – at least partially – the promotion costs. Commercial partners include all major grocery retail brands, some fast-food outlets, caterers and food manufacturers, which mainly contribute by carrying the 5-a-day logo on their products.</i></p> <p><i>Branding</i></p> <p><i>official logo The official logo was launched on March 25th, 2003. “The national campaign has started the development of a logo and portion indicator, whose license can only be granted by the Department of Health to products, which meet a set of nutritional criteria (e.g. related to their fat, sugar, and salt contents). ... the logo launch had a wide press coverage and also implied initial licensing to over 550 organizations and 700 fruit and vegetable products.” (p90)</i></p> <p><i>Other support materials</i></p> <p><i>National School Fruit Scheme (NSFS); logo licensing; community based initiatives; partnership with selected grocery retailers; local initiatives.</i></p>			
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<p>Croker (2012)¹³⁸</p> <p>EPHPP: 2</p> <p>Moderate</p>	<p>Health Topic Diet Physical activity</p> <p>Aim of study <i>"the Department of Health commissioned the current study to independently evaluate [Change 4 Life]. The specific aim was to evaluate the impact of the 'family information pack' element of C4L, using a randomised, controlled study design, on (i) parents' attitudes to their children's eating, activity and weight, (ii) their intentions to change eating and activity behaviours and (iii) the reported diet and activity behaviours of parents and children." (p2) "The current research project focused on Phase 2 (access to the print resources and completion of the questionnaire) and Phase 3 (receiving the family information pack) [of the 4-phased</i></p>	<p>Campaign setting England</p> <p>Characteristics Campaign aim <i>"To encourage the target groups to: i) be aware of the health risk of excess body fat, ii) reduce calorie intake and develop healthier eating habits (reductions in foods high in added sugar and fat, a more regular meal pattern, less snacking, and increased fruit and vegetable intake), and iii) participate in regular physical activity (especially family activities) and reduce sedentary time."</i> (p2) Theoretical framework <i>Unclear/hypothetical "The campaign was based on a hypothetical model of behaviour change, but this was unproven prior to implementation [3 Department of Health: Change4Life marketing strategy. London: Crown Copyright; 2009.]. Ideally, thorough testing should be carried out before interventions are implemented [32]; this could have compromised the design of the current study as well as limiting campaign effectiveness nationally. The campaign was reported to be based on SM concepts [3], but is unclear from the marketing strategy whether adherence to SM criteria was measured. It is also unclear whether the campaign additionally drew on the behaviour change literature." (p10)</i></p>	<p>Study country England <i>"across England selected to represent a mix of... urban and rural areas, and a wide geographical spread."</i></p> <p>Sample size <i>**Survey BASELINE: 16,029 children were given invitation letters at their schools; 3,774 families with 4,419 children returned the baseline questionnaire (28% response rate). 88% completed by mothers, 76% families were white (n = 2831) with similar numbers of girls (49%) and boys (51%); 35% parents were educated to university level (n = 1300); children were on average 8.3 (s. d. = 1.8) years old, and parents were 38.3 (6.2) years. Parents' mean BMI was 24.9 (4.6), with 40% (n = 1392) overweight or obese. 74% parents described their child's weight as 'average' (n = 2788) and only 11% (n = 414) as 'slightly' or 'very overweight'. **Survey FOLLOW-UP: N=1419 (n=532 intervention, n=887 control) parents of 5-11 year old children recruited from 40 state-funded primary schools across England. Those who returned follow-up questionnaires were older, had a lower BMI, and were proportionally more white and better educated. They also rated</i></p>	<p>Sub-group analyses Age Socio-economic status Education</p>	<p>Media outcomes Social cognition: Awareness Social cognition: Attitudinal / emotional responses</p> <p>Proximal outcomes Social cognitive: Attitudes Social cognitive: Intention</p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>
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	<p><i>campaign]" (p3)</i></p> <p>Was Mass Media sole focus?</p> <p>No</p> <p><i>"Phase 2 encouraged families to engage with the campaign by completing the 'How are the Kids' (HTK) questionnaire. From this they would receive feedback in the form of a personalised 'family information pack' (Phase 3). The HTK questionnaire and personalised family information pack were based on the campaign's eight targets for child behaviour change (reducing intake of fat (especially saturated fat), reducing sugar, controlling portion size, consuming at least five portions of fruit and vegetables a day, having a regular pattern of three meals per day, reducing snacking, doing at least an hour of moderate-intensity</i></p>	<p>Duration of the programme <i>Launched January 2009 and families completed HTK questionnaires as part of the national C4L campaign between Feb 2009 and Aug 2011</i></p> <p>Scope <i>national</i></p> <p>Target populations <i>parents of primary school aged children targeted at lower SES parents Phase 4 supported 'at risk' families (primarily lower SES) with regular booster materials by mail or online</i></p> <p>Components</p> <p>Channels <i>TV, print and poster advertising</i></p> <p>Messages <i>"The term 'obesity' was specifically not mentioned in any materials. ... aimed to 'reframe' obesity as a health rather than an appearance issue; and one that was relevant to everyone." (p3)</i></p> <p>Branding <i>Change4Life</i></p> <p>Other support materials <i>A helpline, a website, accompanying material resources (e.g. Families in intervention schools were mailed the C4L print materials and the 'How are the Kids' questionnaire; those returning the questionnaire were sent personalised feedback and others received generic materials).</i></p>	<p><i>diet and activity to be marginally more important at baseline and were more likely to regard their child's diet and activity to be adequate, but found it less easy to help their child to be active.</i></p> <p><i>**Interviews: N=12 home-based interviews with intervention parents, selected to ensure representation from lower and higher SES families.</i></p> <p>Date of data collection <i>summer 2009 to summer 2010</i></p> <p>Study design <i>RCTs / Trials cluster-randomised trial (clustered by school) Qualitative</i></p> <p>Data collection method <i>Survey self-completion, before and after (postal questionnaires) Interviews home-based</i></p>		
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	<i>activity per day, and reducing sedentary time)." (p3)</i>				
Eves (2012a)¹³⁹ EPHPP: 1 Strong	<p>Health Topic Physical activity</p> <p>Aim of study <i>An observational study using two worksites to test a campaign using calorific expenditure messages aimed at attitudinal change on stair climbing for effects on behaviour, attitude and intention.</i></p> <p>Was Mass Media sole focus? Yes</p>	<p>Campaign setting England <i>West Midlands (2 worksites)</i></p> <p>Characteristics Campaign aim <i>aimed at attitudinal change on stair climbing.</i> Theoretical framework <i>Theory of Planned Behaviour ("behaviour is determined by intentions to perform it")</i> Basis of programme design <i>Message pre-testing: "Members of the public in two cohorts (2 x n = 150) were interviewed by postgraduate students beside a 6-floor building in the West Midlands, UK. Participants read the stem 'Regular stair climbing' and the statements 'burns more calories per minute than jogging' and 'burns more calories per minute than rowing'. ... Respondents then rated how much 'each message would encourage them to use the stairs' ... To simulate effects of endorsement by health promotion agencies, half the interviewees in each cohort were told that these calorific consequences of stair climbing were true" before ratings given.</i> Duration of the programme <i>4 weeks (baseline week after</i></p>	<p>Study country England <i>West Midlands</i></p> <p>Sample size <i>2 worksites (1200 employees - posters only site, 500 employees - posters+stairwell site); the follow-up questionnaire was returned by 165 (13.8%) and 123 (24.6%) employees.</i></p> <p>Date of data collection Not reported</p> <p>Study design Repeated Cross Sectional <i>quasi-experimental/interrupted time series</i></p> <p>Data collection method Survey <i>a follow-up questionnaire distributed through the worksite internal mail</i> Other <i>Automated observations of stair and lift ascent and descent at baseline and for 3 weeks during intervention. "Employees entering and exiting the ground floor lift(s) and stairwell were recorded by unobtrusive automatic counters ...</i></p>	<p>Sub-group analyses Gender Message</p>	<p>Media outcomes Social cognition: Credibility Social cognition: Salience</p> <p>Proximal outcomes Social cognitive: Intention</p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>

		<p><i>intervention installed, 3 follow-up weeks)</i></p> <p>Dose intensity <i>posters in the foyer and halfway up each flight of stairs; arrow at the lift button with the message 'Stairs this way', above this arrow, another poster. 'Poster and stairwell messages' worksite (5 floors): six different messages were positioned on the wall beside the stair risers between each floor.</i></p> <p>Scope <i>Local ("Posters alone; City Council building, 1200 employees, five floors: Posters + Stairwell messages; Water Supply company, 500 employees, four floors" p3)</i></p> <p>Components</p> <p>Channels <i>Posters Both worksites: A2 posters positioned in the foyer and one halfway up each flight of stairs; an arrow at the lift button pointed to the stairs with the message 'Stairs this way', above this arrow, another A4 poster. 'Poster and stairwell messages' worksite: six different messages were positioned on the wall beside the stair risers between each floor.</i></p> <p>Messages <i>"The campaign that we report added two elements that targeted attitudes to a conventional point-of-choice campaign. First, an extended message</i></p>	<p><i>only data from 7:00 am to 5:59 pm were included in analyses." (p3)</i></p>		
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		<p><i>translated information about the calorific expenditure of stair climbing into lay terms. ... The main text in one worksite (Poster alone) was compared with a second worksite (Poster + Stairwell messages) in which supplementary messages in the stairwell described calorific outcomes of stair use ... Thus, the extended text and supplementary messages targeted attitudinal change, whereas the conventional point-of-choice prompt at the lift button aimed to translate any changed intentions into action." (p2)</i></p> <p>Source <i>"Each poster message was endorsed prominently by the highly credible sources of the Heart of Birmingham Teaching NHS Primary Care Trust, Healthy Living, NHS Health Scotland and the University of Birmingham." (p3)</i></p>			
<p>Eves (2012b)¹⁴⁰ OCCS: Fair</p>	<p>Health Topic Physical activity</p> <p>Aim of study <i>To test the effects of a worksite mountain climbing campaign, using a mountain climbing goal to encourage regular stair climbing, on objective measures of</i></p>	<p>Campaign setting England <i>West Midlands (1 office building/worksite)</i></p> <p>Characteristics Campaign aim <i>to encourage stair use in buildings</i> Theoretical framework <i>Tested whether individual's self-categorisation of their level of physical activity might affect preferred campaign message. Categories were</i></p>	<p>Study country England <i>West Midlands</i></p> <p>Sample size <i>1 worksite (office building n=803 employees (50.9% male))</i></p> <p>Date of data collection Not reported</p> <p>Study design Repeated Cross Sectional</p>		<p>Media outcomes <i>None reported</i></p> <p>Proximal outcomes <i>None reported</i></p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes <i>None reported</i></p>

	<p><i>stair use.</i></p> <p>Was Mass Media sole focus? Yes</p>	<p><i>based on Stage of Change for physical activity (Laforge, Velicer, Richmond, & Owen, 1999). Basis of programme design Message pre-testing: "Members of the public (n=1350) completed a structured interview by a large civic 6-floor building in a public square in the West Midlands, UK. First, participants indicated the message most likely to encourage them to climb the stairs to the top of the building from four different alternative statements. The choice of alternatives varied the final height of the goal and, as a consequence, the time taken to achieve it. ... Participants were presented with four different statements of the form, 'Did you know? Walk to the top of this building each day and in one year you would have climbed Mt. Everest. Now that would keep you fit'. The four time frames and associated goals included in the different statements were a) one year to climb Mt. Everest, b) six months to climb the Alps, c) two months to climb Ben Nevis (the highest UK mountain), d) two weeks to climb the Eiffel Tower. Participants chose one alternative from four presented on a single sheet of paper. Next, participants indicated their Stage of Change for physical activity." (p171-2) "Mt. Everest was the most popular (60.2%) ... Only 4.7% indicated no</i></p>	<p><i>quasi-experimental/interrupted time series</i></p> <p>Data collection method Other <i>Automated observations of stair and lift ascent and descent at baseline and for 3 weeks during intervention. "One set of counters monitored the stairwell with two further sets monitoring the lifts, one set for each pair. ... Monitoring took place every weekday between 7 a.m. and 6.59 p.m., with complete data for 13 days of baseline and 18 days of the Everest campaign; two days were lost during each phase when the counters lost alignment (three days) and one of the lifts was out of order." (p172)</i></p>		<p>Process outcomes <i>None reported</i></p>
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		<p><i>preference or that none of the alternatives would encourage them to climb stairs.” (p172)</i></p> <p>Duration of the programme <i>18 working week days (13 days baseline phase and 18 days after intervention installed) (2 days lost at each phase from technical issues)</i></p> <p>Dose intensity <i>Posters at point of choice, outside 2 lifts, insides 2 lifts and on each of 12 floors in the stairwell.</i></p> <p>Scope <i>Local (1 city worksite)</i></p> <p>Components</p> <p>Channels <i>Posters/prompts: green A2 poster at the point-of-choice; an arrow at the 2 lifts buttons pointed to the stairs with the message ‘Stairs this way’, above this arrow, a yellow A4 prompt; yellow A4 prompt inside the lifts; and green [A2?] poster on every floor in the stairwell.</i></p> <p>Messages <i>A health goal: “‘The height of the building at 12 floors meant that a daily ascent would result in climbing Mount Everest almost twice and hence that message was used. In addition, we replaced the outcome of the interview, ‘Now that would keep you fit’, with the descriptor, ‘Now that’s a lot of exercise’, to avoid confounding the aspirational goal with a health one. ...</i></p>			
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		<p><i>point-of-choice with the text ‘Take the stairs to the top of this building once a day and in a year, you would have climbed Mount Everest almost twice. Now that’s a lot of exercise.’ (p172)</i></p> <p>Source <i>Both the A2 and A4 posters</i> <i>"prominently displayed logos for the University of Birmingham, Healthy Living and Heart of Birmingham Teaching, Primary Care Trust NHS"</i></p>			
<p>Flowers (2013)¹⁴¹</p> <p>OCCS: Fair</p>	<p>Health Topic Sexual health</p> <p>Aim of study <i>This paper explores the exposure and impact of a Scottish mass media campaign: Make Your Position Clear. It ran from October 2009 to July 2010, targeted gay men and other men who have sex with men (MSM), and had two key aims: to promote regular sexual health and HIV testing every 6 months, and to promote the use of appropriate condoms and water-based lubricant with each episode of anal</i></p>	<p>Campaign setting Scotland <i>across the West of Scotland.</i></p> <p>Characteristics Campaign aim <i>It had two key aims: to promote the use of condoms and water-based lubricant with each episode of anal intercourse; and to promote regular sexual health check ups and HIV testing every 6 months, or more often if the individual had put himself at risk.</i> Theoretical framework <i>As far as we are aware, there was no explicit attempt to use any theoretical behaviour change techniques within the campaign development,</i> Basis of programme design <i>The development of the campaign involved consultation with voluntary sector agencies and representatives of the target group (through focus groups), prior to commissioning a</i></p>	<p>Study country Scotland west</p> <p>Sample size <i>The maximum sample included in the analysis was 784 The total sample was 822 men</i></p> <p>Date of data collection July 2010</p> <p>Study design Post test <i>The current study involved one cross-sectional survey of men recruited from seven bars frequented by gay men and other MSM in Glasgow in July 2010, ten months after the campaign had been launched (i.e., post-test only).</i></p>	<p>Sub-group analyses Age Education Other Employment status Geographical area Use of gay scene</p>	<p>Media outcomes Social cognition: Awareness Social cognition: Exposure</p> <p>Proximal outcomes Social cognitive: Intention Behavioural: Treatment seeking</p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes None reported</p> <p>Process outcomes None reported</p>

	<p><i>intercourse., 1. What was the extent of self-reported exposure to the MYPC campaign among men frequenting venues for gay men and MSM? 2. Did sexual health related behaviours (i.e., unprotected anal intercourse (UAI), HIV testing and STI testing and use of appropriate lubricant) vary by degree of exposure to the campaign?</i></p> <p>Was Mass Media sole focus? Yes</p>	<p><i>creative agency to develop the materials. The consultations and focus groups centred on obtaining views on setting, medium, imagery and tone. The first set of posters and images produced were subjected to further consultation with the voluntary sector agencies, and revisions were prepared in line with feedback.</i></p> <p><i>Duration of the programme It ran from October 2009 to July 2010.</i></p> <p><i>Audience Exposure Scope west of scotland Target populations gay men</i></p> <p>Components Channels <i>Campaign materials included posters, electronic images and leaflets, with a dedicated campaign website.</i> <i>Campaign materials included posters, electronic images and leaflets, with a dedicated campaign website. Posters and leaflets were distributed to GP practices, dental surgeries, community pharmacies, sexual health clinics, community centres and libraries across all three health boards. Within the health board covering Glasgow, the posters and leaflets were also distributed to bars, clubs and saunas targeted at MSM and gay men, further education establishments and sports centres. Posters were displayed</i></p>	<p>Data collection method Survey</p>		
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		<p><i>on local buses and on the Glasgow subway trains, and at some local authority workplaces (including certain fire and police stations). Materials were also shown and distributed at the Pride 2010 event in Glasgow. A smart phone application designed for MSM also advertised the campaign</i></p> <p><i>Messages</i></p> <p><i>It had two key aims: to promote the use of condoms and water-based lubricant with each episode of anal intercourse; and to promote regular sexual health check ups and HIV testing every 6 months, or more often if the individual had put himself at risk. Six related images were used in the campaign materials: four were designed for display in venues and websites used by or targeted at MSM, and two were designed for display in other venues. All images included two men and a 'position' name and number (e.g., "Position #21, the watercooler"), with one of the key messages ("Whatever position you're in, it's a lot safer with condoms and lube" or "Whatever position you're in, sexual health check ups have a part to play") and a link to the campaign website [26, appendix 7].</i></p> <p><i>Targeting strategies</i></p> <p><i>Posters and leaflets were distributed to GP practices, dental surgeries, community pharmacies, sexual health clinics, community centres and libraries</i></p>			
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		<p>across all three health boards. Within the health board covering Glasgow, the posters and leaflets were also distributed to bars, clubs and saunas targeted at MSM and gay men (i.e., the "gay scene"), further education establishments and sports centres. Outreach workers from a local voluntary sector agency were involved in the distribution of leaflets at bars, clubs and saunas targeted at gay men and other MSM. Posters were displayed on local buses and on the Glasgow subway trains, and at some local authority workplaces (including certain fire and police stations). Materials were also shown and distributed at the Pride 2010 event in Glasgow. Online, the campaign was advertised on five sites, two of which were sites targeted at MSM. A smart phone application designed for MSM also advertised the campaign.</p> <p>Branding 'make your position clear' logo</p>			
<p>Goodwin (2014)¹⁴²</p> <p>CASP Qual: [xx]</p>	<p>Health Topic Physical activity</p> <p>Aim of study "The focus of this study was threefold: (1) to investigate how the LAC campaign was conceptualized and the processes followed</p>	<p>Campaign setting England Liverpool</p> <p>Characteristics Campaign aim "to raise awareness of the significance of physical activity and encourage participation and engagement in LAC activities" "one component of a</p>	<p>Study country England Liverpool (and the Public Survey was specifically, "various locations around Liverpool city centre")</p> <p>Sample size n=1 campaign lead designer interview; n=100 public survey with current residents of Liverpool (62</p>		<p>Media outcomes Social cognition: Awareness Social cognition: Understanding Social cognition: Identification Social cognition: Attitudinal / emotional responses</p>

	<p>prior to its launch; (2) to assess the impact of the LAC physical activity campaign in raising awareness of the significance of physical activity and encouraging engagement; and (3) to implement formative evaluation feedback to understand lessons learnt amongst key stakeholders to inform future health promotion campaigns." (p556)</p> <p>Was Mass Media sole focus? Yes</p>	<p>broader Liverpool Active City (LAC) strategy to increase physical activity and reduce obesity prevalence." (p555-6)</p> <p>Basis of programme design a point of choice strategy used for the mass media Channels, but "there was no public consultation by way of a pilot assessment prior to the launch of the campaign"</p> <p>Duration of the programme 1 month, January 2007 (to coincide with the UK sales period)</p> <p>Scope Local (city-wide)</p> <p>Target populations None ("The design was not aimed directly at obese people: we wanted to increase awareness on levels of obesity within Liverpool ... we were looking to get people to understand what is a local issue" and the selected image was non-gender specific.)</p> <p>Components</p> <p>Channels A single "image advertised across the city on telephone boxes, prescription bags at pharmacies, in shop windows, inside buses on header rails, lampposts in close proximity to supermarkets, on advertising bikes parading in the city, and within and outside taxis" (p556)</p> <p>Messages "the image was intended to be 'comical' and 'advertise health', while</p>	<p>women, 38 men; mean age 37 years [SD 11; range 16–82]); n=5 formative evaluation feedback (group discussion n=4 (2 health promotion specialists, the social marketing manager, the design coordinator from Liverpool PCT + email n=1 (campaign lead designer)).</p> <p>Date of data collection 2007</p> <p>Study design Post test cross-sectional survey Qualitative campaign lead designer interview (and emailed feedback); formative evaluation feedback (group discussion)</p> <p>Data collection method Survey On-street public survey: "a semi-structured survey using opportunistic sampling methods over a one-month period in various locations around Liverpool city centre." "The survey addressed the message, image and layout of the poster, current and intended physical activity participation and a question surrounding memorable public health campaigns. Questions were both open and closed.</p>	<p>Proximal outcomes Social cognitive: Intention</p> <p>Intermediate outcomes None reported</p> <p>Distal outcomes None reported</p> <p>Process outcomes None reported</p>
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		<p><i>playing on the January sale concept. ... the tagline 'More than a quarter of people in Liverpool are obese...' was ... intended to relate directly to the image and raise awareness of obesity levels within Liverpool."</i></p> <p>Branding <i>Liverpool Active City brand was included in the image</i></p>	<p><i>Questions included: (1) 'have you seen this image around the city?'; (2) 'have you heard of Liverpool Active City?'; (3) 'if yes, what can you tell us about it?'; (4) 'what do you think about the layout of the poster?'; (5) 'what message do you get from this poster?'; (6) 'why do you think this person has a body like this?'; (7) 'can you see yourself getting involved in any LAC activities?'; and (8) 'can you think of a visual public health campaign which you found memorable? Why?'"(p557-8) [NB the reported outcomes data all come from this element of the data collection]</i></p> <p>Focus groups <i>Formative evaluation feedback: a group session with key stakeholders, asked for their views on the raw comments from survey respondents. (Plus email correspondence with the lead designer)</i></p> <p>Interviews <i>In-depth open-ended 50-minute interview with the campaign lead designer, plus post-test email correspondence to ask for views on the raw comments from survey respondents</i></p>		
<p>Jawad (2015)¹⁴³ OCCS: Poor</p>	<p>Health Topic Tobacco use</p>	<p>Campaign setting Other <i>Online</i></p>	<p>Study country England <i>London Borough of Brent</i> Other</p>	<p>Sub-group analyses Age</p>	<p>Media outcomes Social cognition: Exposure</p>

	<p>Aim of study <i>"Aimed to create and assess the impact of a social media campaign about dangers of waterpipe smoking ... The objective of this paper is to describe the use of social media in conducting this campaign, for tobacco control purposes." (p1-2)</i></p> <p>Was Mass Media sole focus? Yes</p>	<p>Characteristics Campaign aim <i>To raise awareness about the health risks of waterpipe tobacco smoking via a YouTube video and posting of "shisha facts" and global news articles in social media.</i> Basis of programme design <i>A "grassroots initiative" and the video was designed by young people.</i> Duration of the programme <i>9 months</i> Audience Exposure <i>Facebook: 130 status updates over 9 months (14.4 posts/month). Twitter: tweeted" 373 times over 9 months, (1.4 "tweets"/day); longitudinal "tweeting rate" declined over time, from 2.2 "tweets"/day from months 0–3 to 1.1 "tweets"/day from months 3–6 and then to 0.8 "tweets"/day from months 6–9. 73.2% current affairs tweets. YouTube: posted 1 video.</i> Scope <i>global</i> Target populations <i>"The target audience of the campaign was the local government organisations (through the field activities) but also the wider global community (through the social media)." (p2)</i> Cost <i>An unfunded initiative: used free website-building program and free to access media platforms; campaign</i></p>	<p><i>global online community</i></p> <p>Sample size Not reported</p> <p>Date of data collection Not reported</p> <p>Study design Repeated Cross Sectional</p> <p>Data collection method Other <i>Social media usage data (page traffic, page views, unique trends, and views) at 3, 6, and 9 months; likes/comments; and user interaction data (Facebook only).</i></p>	<p>Gender Reach</p>	<p>Interaction: Other (with Twitter, Facebook)</p> <p>Proximal outcomes <i>None reported</i></p> <p>Intermediate outcomes <i>None reported</i></p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes Other</p>
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		<p><i>team used volunteers.</i></p> <p>Components</p> <p>Channels <i>A website and 3 social media channels: Facebook, Twitter and YouTube</i></p> <p>Channel Interactivity <i>All 3 social media channels involved user interactivity with the campaign.</i></p> <p>Messages <i>The video "maintained an "It's your choice" message throughout"</i></p> <p>Targeting strategies <i>"ShishAware was advertised by posting content on other, related social media accounts", although the authors did not specify how they were related.</i></p> <p>Source <i>The campaign video contained "excerpts from interviews with (i) young people who had just attended a workshop on waterpipe smoking, (ii) an ex-waterpipe smoker, who detailed reasons for cessation, (iii) one of the ShishAware members, who explained the aims of this campaign, and (iv) general public" (p2)</i></p> <p>Branding <i>ShishAware</i></p>			
<p>Kotz (2011)¹¹⁹</p> <p>OCCS: Good</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>To produce a rigorous estimate of cost-</i></p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim <i>"helps smokers who want to stop</i></p>	<p>Study country England</p> <p>Sample size <i>n=1309 respondents in April 2007-2009 (the month following NSD) and</i></p>	<p>Sub-group analyses Age Gender Time Other</p>	<p>Media outcomes <i>None reported</i></p> <p>Proximal outcomes <i>None reported</i></p>

	<p><i>effectiveness of No Smoking Day (NSD) using national smoking behaviour survey data and by comparing the rate of quit attempts during the month following NSD with the rate in the two adjacent months.</i></p> <p>Was Mass Media sole focus? Yes</p>	<p><i>smoking by creating a supportive environment and highlighting the help available for smokers who want to stop" (p302)</i></p> <p>Duration of the programme <i>1 day annually but not reported when the campaign begins around this.</i></p> <p>Scope <i>National (UK-wide)</i></p> <p>Target populations <i>Smokers who want to quit</i></p> <p>Cost <i>Total annual direct cost of campaign delivery is approx. £750,000</i></p> <p>Components</p> <p>Channels <i>"It involves a national social marketing campaign and provides materials such as posters and leaflets to local organisations to use in events and promotional activities" (p302)</i></p> <p>Targeting strategies <i>"works closely with local National Health Service Stop Smoking Services and others ... provides materials to local organisations"</i></p> <p>Branding <i>No Smoking Day (2nd Wednesday in March)</i></p> <p>Other support materials <i>works closely with local NHS Stop Smoking Services and others to provide ongoing support</i></p>	<p><i>n=2672 respondents in the adjacent March and May 2007-2009 reported that they had smoked cigarettes (including hand-rolled) or any other tobacco product (eg, pipe or cigar) daily or occasionally at the time of the survey or during the preceding 12 months. No significant differences by mean age, mean cigs/day, gender, or cessation support.</i></p> <p>Date of data collection <i>March, April and May 2007-2009</i></p> <p>Study design <i>Repeated Cross Sectional The 'Smoking Toolkit Study' - monthly household survey</i></p> <p>Data collection method <i>Survey 'Smoking Toolkit Study': computer-assisted face-to-face household surveys (monthly)</i></p>	<p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes Cost effectiveness data</p>
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<p>Langley (2012)¹⁴⁴</p> <p>OCCS: Good</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>To evaluate the effect of tobacco control media campaigns and pharmaceutical company-funded advertising for nicotine replacement therapy (NRT) on smoking cessation activity.</i></p> <p>Was Mass Media sole focus? Yes</p>	<p>Campaign setting England Wales</p> <p>Characteristics Campaign aim <i>Campaigns for smoking cessation Tobacco control mass media campaigns (overall, not single campaign): to decrease smoking prevalence and/or increase smoking cessation. Pharmaceutical-company funded campaigns for NRT (overall, not single campaign): to increase the use and sales of NRT.</i> Duration of the programme <i>Tobacco control campaigns: January 2002 - May 2010 Pharmaceutical campaigns: January 2005 - December 2009</i> Audience Exposure <i>TVRs This study used time series data on television ratings points (TVRs), a standard broadcasting industry measure, as its measure of exposure to anti-tobacco mass media advertising and smoking cessation medication advertising. A TVR is defined as the percentage of a particular audience that has seen a commercial break. seasonal trends in TVRs TVRs tended to peak in January and were highest in January 2005 and 2010. Pharmaceutical company TVRs were characterized by peaks and troughs through-out the period studied. The</i></p>	<p>Study country England <i>all outcomes (helpline calls data, NRT prescribing and over-the-counter sales</i> Wales <i>NRT prescribing and over-the-counter sales only (not helpline calls data)</i></p> <p>Sample size <i>records from 500 GP practices</i> Not reported <i>Not applicable - no sampling beyond the time period selected. All calls to helpline and sales included.</i></p> <p>Date of data collection <i>TVRs purchased for tobacco control campaigns by the Central Office of Information (on behalf of the government), Cancer Research UK and the British Heart Foundation (the three main purchasers of such advertising during the time period) each month from January 2002 to May 2010; and • TVRs purchased by pharmaceutical companies to advertise NRT each month from January 2005 to December 2009. This study uses the number of calls to the NHS helpline per month from November 2004 to June 2010. We divided the unit sales each month by the monthly population denominators to obtain the rate of</i></p>	<p>Sub-group analyses Time</p>	<p>Media outcomes <i>None reported</i></p> <p>Proximal outcomes Behavioural: Information seeking Behavioural: Treatment seeking</p> <p>Intermediate outcomes <i>None reported</i></p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>
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		<p><i>largest peaks were in January 2005 and July 2007, when smoke-free legislation was implemented in England.</i></p> <p>Scope <i>national</i></p> <p>Target populations <i>smokers</i></p> <p>Components</p> <p>Channels <i>TV</i></p> <p>Source <i>Tobacco control campaigns: the government, Cancer Research UK, the British Heart Foundation. Pharmaceutical campaigns: pharmaceutical companies.</i></p>	<p><i>sales per 100 000 population per month from November 2003 to September 2008. We assumed that those contributing data within each month provided one person-month of follow-up, and divided the numbers of prescriptions by the total person-months to derive the rate of prescribing per month from January 2002 to June 2009.</i></p> <p>Study design</p> <p>Other <i>Multiple time series analysis: “In this study we used structural vector autoregressive (SVAR) analysis, which allows assumptions to be made about the direction of causality by imposing a unidirectional relationship within the model. This helps to unpick the temporal relationships between variables—the impact of an intervention within the current time-period as well as any lagged effects in subsequent time-periods. We modelled a unidirectional relationship from mass media campaigns to quitting behaviour. ... We ran short-run SVAR models of the effect of tobacco control advertising and NRT advertising on quitline calls, OTC NRT sales and prescribing for NRT. The time series that were available for the different exposures and outcomes were of</i></p>		
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			<p>varying lengths; however, in each of our models, only the overlapping parts of each time series were used. ... The results are presented as a table of the contemporaneous (i.e. within-month) effects of all the models and IRFs [Impulse Response Functions].” (p2045)</p> <p>Data collection method Other data from routine processes not created for the research Outcomes: 1) number of calls to NHS Stop Smoking Services helpline per month from November 2004 to June 2010; 2) NRT over-the-counter sales data from Electronic Point of Sales scanner data (Information Resources Inc.); divided the monthly unit sales by monthly population denominators for rate of sales per 100,000 population per month from November 2003 to September 2008; 3) divided the numbers of prescriptions by the total person/months in The Health Improvement Network (THIN) database of UK primary care records to derive the rate of prescribing per month from January 2002 to June 2009.</p>		
<p>Lewis (2011)¹⁴⁵ OCCS: Good</p>	<p>Health Topic Physical activity</p>	<p>Campaign setting England West Midlands, a Midland Metro</p>	<p>Study country England</p>	<p>Sub-group analyses Gender</p>	<p>Media outcomes None reported</p>

	<p>Aim of study To investigate effects of a multi-component point-of-choice campaign on stair climbing in a public access setting (metro station).</p> <p>Was Mass Media sole focus? Yes</p>	<p>station "with a 43-step staircase (height=6.45 m) positioned 16.5 m beyond the escalator"</p> <p>Characteristics Campaign aim "We reasoned that if regular stair climbing was to be encouraged, then potential responders required information about the amount of stair climbing that would produce health benefits ... The new campaign message aimed to summarise the science underlying the calorific consequences of stair climbing in simple terms ... Our overarching aim was to encourage further use of stairs when presented with a subsequent choice. ... To increase stair climbing, typically a sign is positioned at the point-of-choice between stairs and escalators encouraging pedestrians to take the stairs for their health. ...we aimed to augment the effects of the point-of-choice prompt by providing specific information about the benefits of stair climbing and predicted greater effects for the two components than for the point-of-choice prompt alone." (p258) Basis of programme design Based on previous research by these authors: "Point-of-choice prompts function to convert prior intentions to be more active into behaviour by interrupting unhealthy choices at the point of their occurrence (see [5, 10,</p>	<p>West Midlands</p> <p>Sample size n=23,121 pedestrians leaving trams were coded at 1 metro station (57.9% female, 22.4% overweight). Baseline stage 1, n=3,829; Intervention stage 2, n=4,737; Intervention stage 3, n=6,766; Intervention stage 4, n=7,789.</p> <p>Date of data collection 2008</p> <p>Study design Repeated Cross Sectional a quasi-experimental, interrupted time-series design</p> <p>Data collection method Other Observation: 4 inconspicuous observers recorded stair/escalator choices of ascending travellers, between 08:00 and 09:59, on Tuesday and Thursday each week. 2 weeks baseline observations (stage 1); sole positioning of a conventional point-of-choice prompt at base of stairs for 2 weeks (stage 2); supplemented with extended message positioned at top of the climb for 6 weeks, separated into consecutive 3-week periods for analysis (stages 3 and 4).</p>	<p>Weight status Time</p>	<p>Proximal outcomes None reported</p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes None reported</p> <p>Process outcomes None reported</p>
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		<p>14, 16])." (p259) ... "Intriguingly, a multi-component campaign increased stair climbing more in overweight than normal weight employees (+5.4% vs. +2.5%) suggesting stair climbing may be an appealing lifestyle activity for the overweight [17]." (p258)</p> <p>Duration of the programme 8 weeks (2 weeks point-of-choice prompt at base of stairs only, then 6 weeks with additional posters at the top summarising the calorific consequences)</p> <p>Dose intensity 1 poster at the base, 2 posters at the top. "Pedestrian traffic volume ... was entered as a continuous variable (mean=78 pedestrians per tram, range 21–156)" (p259)</p> <p>Scope Local - 1 metro station</p> <p>Components</p> <p>Channels Posters: "the point-of-choice prompt, i.e. an A1-sized (594×841 mm) poster, presented the message Regular stair climbing helps to prevent weight gain. The point-of-choice prompt was then supplemented with an extended message positioned at the top of the climb for six further weeks (stage 3 [and stage 4]); the supplementary message on two, A1-sized posters positioned at the exit was Well Done Stair Climbers! You have just burnt a</p>			
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		<p>16th of the calories needed to avoid weight gain." Messages "The new campaign message aimed to summarise the science underlying the calorific consequences of stair climbing in simple terms ... This message specified the outcome of an achievable behaviour, i.e. a single ascent, which we hoped represented meaningful progress towards the overall goal of weight control for potential responders."</p>			
<p>Lewis (2012b)¹⁴⁶ OCCS: Good</p>	<p>Health Topic Physical activity</p> <p>Aim of study To investigate the effectiveness of volitional (to translate intentions into actions) and motivational (to change attitudes and intentions) components of a stair-climbing intervention in the workplace.</p> <p>Was Mass Media sole focus? Yes</p>	<p>Campaign setting England 4 buildings at the University of Birmingham; "building heights, that is, individual step height multiplied by the total number of steps in the building, ranged from 13.12 m to 33.32 m, that is, four to eight floors, number of lifts per building ranged from one to three, and the average traffic volumes per building, that is, per 15-min period across all stages, ranged from 6.10 (SD = 5.3) to 31.00 (SD = 20.6)." (p636)</p> <p>Characteristics Campaign aim To increase stair-climbing Basis of programme design Based on previous research by these authors: "While Olander and Eves (2011a) report effects on stair climbing only for the volitional, point-of-choice</p>	<p>Study country England Birmingham</p> <p>Sample size 4 buildings in 1 worksite. n=14,138 observations were recorded (stage 1, n=4,623; stage 2 n=3,853; stage 3, n=5,662), of which 46% were women.</p> <p>Date of data collection December 2009</p> <p>Study design Repeated Cross Sectional quasi-experimental, interrupted-time-series design</p> <p>Data collection method Other Observation: 4 discrete observers (1</p>	<p>Sub-group analyses Gender Message Time</p>	<p>Media outcomes None reported</p> <p>Proximal outcomes None reported</p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes None reported</p> <p>Process outcomes None reported</p>

		<p><i>prompt, poor dissemination of the motivational intervention to the target population occurred; only 3.2% of the staff from the monitored buildings attended the stand at the Workplace Wellbeing day. In contrast, the point-of-choice prompts were positioned en route to the lift and stairs in each of the buildings observed. Therefore, most employees would have been exposed to the point-of-choice prompt and it is unsurprising that it outperformed the motivational intervention encountered by only 3.2% of employees. Given the inconclusive result of Olander and Eves (2011a), this study reports a more equitable test of effectiveness of motivational and volitional components of a stair-climbing intervention in the workplace.” (p633)</i></p> <p><i>Duration of the programme 13 working week days (5 days motivational intervention only; 8 days volitional intervention plus motivational intervention)</i></p> <p><i>Dose intensity Stage 2 posters inside lifts only (8 lifts in 4 buildings); Stage 3 as Stage 2, plus posters at point of choice and outside 2 lifts. "Preliminary analyses of the traffic data for each 15-min period of monitoring revealed ain effects of stage of intervention ($F(2,695) = 3.64$, $p = .03$) and building ($F(3,695) = 80.719$, $p < .001$). Follow-up analyses</i></p>	<p><i>per building) recorded stair/lift choices of ascending pedestrians, between 08:00–10:00 and 14:15–16:15 each weekday (excluding Wednesday afternoons, and excluding 08:45–08:59, 09:45–09:59, 14:45–14:59, and 15:45–15:59). 5 days baseline observations (stage 1); 5 days motivational intervention of poster inside lift (stage 2); 8 days volitional intervention of point-of-choice prompt plus poster inside lift (stage 3).</i></p>		
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		<p>revealed higher levels of traffic volume in stage 1 (mean = 21.9, SD = 18.9) than stage 2 (mean = 18.4, SD = 18.9, $p = .04$) and a difference between stage 1 and 3 that approached significance (stage 3, mean = 19.1, SD = 17.3, $p = .08$). There was no evidence of differences in overall traffic volumes between stage 2 and 3. The average levels of traffic in the four buildings are shown in Table 1. Follow-up analyses of the effect of building revealed differences in overall traffic volumes between all buildings with the exception of 2 and 3 (all $p < .001$). If, as seemed likely, there was to be an effect of traffic on stair climbing, then differences in traffic between buildings could masquerade as differences in the effects of the building characteristics. To avoid this potential confounding, traffic was mean-centred for each building prior to analyses." (p635)</p> <p>Scope Local (1 city worksite/4 buildings)</p> <p>Components</p> <p>Channels Posters: all buildings, stage 2 – yellow A2 motivational poster inside each lift; all buildings, stage 3 – as stage 2 plus same yellow A2 poster between lift and stairs at point of choice plus green A4 poster plus yellow arrow pointing to stairs at the external lift control panel.</p> <p>Messages</p>			
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		<p>"MOTIVATIONAL components aim to change attitudes and intentions, for example, information-based mass media campaigns such as Change4Life that extol the benefits of stair climbing ... In contrast, VOLITIONAL components aim to translate intentions into actions similar to interventions based on planning and implementation intentions."</p> <p>Source "The message was accompanied by ... endorsements by credible public health and education sources" (p635)</p>			
<p>Lewis (2012a)¹⁴⁷ [XXXX]: [XX]</p>	<p>Health Topic Physical activity</p> <p>Aim of study To compare the effects in a UK train station of two messages differing in complexity about the health outcomes obtainable from stair climbing. "We hypothesized that the more specific health outcome message would have greater effects on stair climbing than the more general one."</p> <p>Was Mass Media sole focus?</p>	<p>Campaign setting England West Midlands, a West Midlands Travel rail station " with 2 independent platforms exited by identical 39-step staircases and adjacent escalators (height = 6.64 m)"</p> <p>Characteristics Campaign aim to increase stair climbing in the station Theoretical framework "Socioecological models include effects of physical and social environments. Here, matched staircases in the same station equated potential effects of the physical environment. Concerning the social environment, pedestrian movement within stations influences stair climbing. Unlike shopping malls, pedestrian traffic flow in stations is</p>	<p>Study country England West Midlands</p> <p>Sample size n=48,697 pedestrians were coded (54.7% female overall) for ascending by stair/escalator as they left the train; simple message platform, n=23,626 (56.7% female); complex message platform n=25,071 (52.9% female).</p> <p>Date of data collection February and March 2008</p> <p>Study design Repeated Cross Sectional A quasi-experimental, interrupted time series design. "this study simultaneously compared the</p>	<p>Sub-group analyses Gender Message Time</p>	<p>Media outcomes None reported</p> <p>Proximal outcomes None reported</p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes None reported</p> <p>Process outcomes None reported</p>

	Yes	<p><i>pulsatile in nature as the disembarking passengers from a particular train try to leave the station simultaneously. ... Here, we quantify the effects of traffic in the station to facilitate comparison between the effects of interventions and the social environment."</i> (p955)</p> <p>Basis of programme design</p> <p><i>"A specific message, 'Regular stair climbing for 7 minutes per day protects your heart,' was compared with the more general message, 'Regular stair climbing protects your heart.' In pilot work, the first message (mean = 6.3 ± 1.9) was rated more specific than the second (mean = 3.9 ± 1.9; t39 = 4.96 P < .001) on a 10-point scale with the anchors not at all (1) and very much (10). It should be noted here that the greater specificity of the first message comes from additional words. The phrase 'for 7 minutes per day' states the amount of stair climbing required to achieve the outcome. The specific message's origin was from a more extended message that aimed to encourage regular stair climbing in a worksite, by incorporating an explicit target for the amount of stair climbing required to achieve health benefits.²⁸ Previously, Yu and colleagues estimated that the amount of vigorous exercise required to reduce the risk of heart attack by two-thirds was equivalent to 7 minutes of stair climbing a day.²⁹ Focus groups</i></p>	<p><i>effects of 2 messages differing in specificity in a train station with matched staircases. Crucially the possibility of an individual being exposed to both messages was negligible at this site due to the operational structure of train arrival."</i> (p955)</p> <p>Data collection method</p> <p>Other</p> <p><i>Observation: 4 discretely positioned observers recorded stair/escalator choices of ascending travellers, between 08:00 and 10:00, on Tuesday and Thursday each week. 2 weeks baseline observations; point of choice poster phase for 3 weeks, simple message on one side's platform and complex message on the other side's platform.</i></p>		
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		<p><i>suggested this would be an effective message theme.²⁸ The shortened version employed here was previously successful in a UK shopping mall²³ and, when translated, in a station in Barcelona, Spain.²⁷ The additional phrase of the specific message, 'for 7 minutes per day,' increased the length and also the complexity of the message and we refer to it with the term 'complex' in the remainder of the manuscript. As a consequence, the more general message is termed 'simple.'" (p956)</i></p> <p>Duration of the programme 3 weeks (2 weeks baseline, 3 weeks poster intervention)</p> <p>Dose intensity 1 poster at the point of choice (base) on each platform. The simple message platform had higher average pedestrian traffic levels (161.6 ± 87.3 pedestrians-train-1) than the complex message platform (130.7± 85.6 pedestrians-train-1).</p> <p>Scope Local (1 rail station)</p> <p>Components</p> <p>Channels Posters: "Two A1-sized posters (594 × 841 mm) were simultaneously tested, 1 on each side of the station. [A complex message, 'Regular stair climbing for 7 minutes per day protects your heart,' was compared with the</p>			
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		<p><i>simple message, 'Regular stair climbing protects your heart.']</i> <i>Positioning of the posters on stands meant that the bottom of the text was 2.37 meters above the ground and hence clearly visible to approaching pedestrians."</i> (p955-6)</p> <p>Messages <i>"The specific [complex] message's origin was from a more extended message that aimed to encourage regular stair climbing in a worksite, by incorporating an explicit target for the amount of stair climbing required to achieve health benefits ... The additional phrase of the specific message, 'for 7 minutes per day,' increased the length and also the complexity of the message."</i> (p956)</p>			
<p>Lewis (2015)¹⁴⁸ OCCS: Good</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>The study "used repeated cross-sectional data from a large national survey to investigate whether televised government-funded tobacco control campaigns - both overall and those specifically aimed at influencing smokers' knowledge and</i></p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim <i>Tobacco control campaigns over the time-period (coded for 2 themes: second-hand smoking and smoking cessation)</i> Duration of the programme <i>75-month study period (Jan 2004 to Apr 2010): second-hand smoking theme broadcast in only 12 of those months.</i> Audience Exposure <i>"The mean monthly exposure for all</i></p>	<p>Study country England <i>Data from the Health Survey for England ... designed to be representative of adults and children living in private households in England.</i></p> <p>Sample size <i>n=9,872 households with at least one adult smoker (≥18 years, responded 'Yes' to "Do you smoke cigarettes at all nowadays?")</i></p>	<p>Sub-group analyses Age Gender Socio-economic status Time Other <i>Households with children</i></p>	<p>Media outcomes <i>None reported</i></p> <p>Proximal outcomes <i>None reported</i></p> <p>Intermediate outcomes Behavioural: Other (smokefree homes)</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>

	<p><i>behaviour in relation to the effects of their smoking on others - resulted in an increase in the number of smokers maintaining a smoke-free home in England."</i></p> <p>Was Mass Media sole focus? Yes</p>	<p><i>[tobacco control] campaigns was 344.7 GRPs, ranging from a minimum of 0 to a maximum of 1,135.2 GRPs per month. GRPs specifically on the second hand smoking theme were low, occurring in only 12 of the 75 months in our study period, with a mean of 155.2 GRPs in the months that they occurred, ranging from a minimum of 0 to a maximum of 514.6 GRPs per month" (p4)</i></p> <p>Scope <i>National campaigns</i> Target populations <i>Smokers</i></p> <p>Components Channels <i>Television</i> Messages <i>"Campaigns with a second hand smoking theme included the 'Second hand smoke is a killer' campaign which aimed to show smokers the health effects that SHS can have on adults that are around the smoker and the 'Invisible killer' campaign which aimed to show the hidden dangers of SHS on both young and old, in particular that 85 % is invisible and odourless. Other campaigns predominantly had a smoking cessation theme." (p3)</i> Source <i>"government-funded national televised tobacco control campaigns, or those run by charities such as the British</i></p>	<p>Date of data collection <i>January 2004 - April 2010 (inclusive)</i></p> <p>Study design <i>Repeated Cross Sectional Analysed annual cross-sectional household survey with Gross Rating Points (GRPs) measure of advertising exposure to national televised tobacco control campaigns.</i></p> <p>Data collection method Survey <i>Health Survey for England "At each co-operating eligible household, the interviewer first completed a household questionnaire, with information obtained from the household reference person or their partner. An individual interview was then carried out with all adults aged 16 years old and over and with up to two children in each household." (p2)</i> Other <i>"Television viewer figures at the time when the advertisements are shown are collected by the Broadcasters' Audience Research Board via a metered panel, and GRPs combine reach and frequency and are equivalent to the summed ratings of individual advertisements." (p2-3)</i></p>		
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		<i>Heart Foundation and Cancer Research UK but funded by the Department of Health" (p3)</i>			
<p>Lyons (2013)¹⁴⁹</p> <p>OCCS: Poor</p>	<p>Health Topic Sexual health</p> <p>Aim of study <i>"to determine if those women who attended our surgery for an implant fitting had been influenced in this decision and if so by whom. We were also keen to determine if they were aware of the campaign to promote the use of LARCs."</i></p> <p>Was Mass Media sole focus? No</p>	<p>Campaign setting England <i>UK Department of Health (England, most of the health items devolved)</i></p> <p>Characteristics Campaign aim <i>A campaign 'Worth Talking About' with two main strands; one focusing on contraception and in particular increasing awareness of LARCs (long-acting reversible contraception) and the other focusing on chlamydia.</i> Duration of the programme <i>Launched November 2009</i></p> <p>Components Channels <i>NR, described as a 'media campaign'</i> Branding <i>'Worth Talking About'</i></p>	<p>Study country England <i>Leeds</i></p> <p>Sample size <i>400 women who had an etonogestrel contraceptive implant (Nexplanon®) fitted</i></p> <p>Date of data collection <i>October 2010</i></p> <p>Study design Post test <i>(described as prospective study, however the results reported here are cross-sectional, post-campaign)</i></p> <p>Data collection method Survey <i>asked at the their fitting appointment</i></p>	<p>Sub-group analyses Gender</p>	<p>Media outcomes Social cognition: Awareness</p> <p>Proximal outcomes <i>None reported</i></p> <p>Intermediate outcomes <i>None reported</i></p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>
<p>McNeill (2014)¹⁵⁰</p> <p>OCCS: Fair</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>We assessed the implementation and impact of a new programme designed to reduce demand for,</i></p>	<p>Campaign setting Other <i>2 North of England Department of Health Regions: Northwest and Northeast</i></p> <p>Characteristics Campaign aim <i>The main aim was to increase the</i></p>	<p>Study country Other <i>Northern England - North East, North West and Yorkshire and Humber</i></p> <p>Sample size <i>Two independent cross-sectional surveys were carried out, in July</i></p>		<p>Media outcomes <i>None reported</i></p> <p>Proximal outcomes Social cognitive: Awareness Behavioural: Engagement with Professionals</p>

	<p><i>as well as supply of, IT, in the north of England, where IT was prevalent.,</i></p> <p>Was Mass Media sole focus? No <i>mostly about the set up of the programme some info from views</i></p>	<p><i>health of the population by reducing smoking prevalence through (a) reducing the supply and availability of IT, thus keeping tobacco prices high, and (b) reducing the demand for IT by building on existing tobacco control measures such as media campaigns (figure 1).</i></p> <p><i>Basis of programme design social marketing, consumer questionnaires, consultation with stakeholders</i></p> <p><i>Duration of the programme June / July 2010</i></p> <p><i>Scope regional</i></p> <p><i>Target populations smokers, people living in disadvantaged areas "aimed at people who were already slightly uncomfortable with illicit tobacco" (p48)</i></p> <p>Components</p> <p><i>Channels a range of media, including websites, Channel Interactivity hotlines for reporting illegal tobacco Messages</i></p> <p><i>Its two main messages were that IT made it easier for children to start smoking, and that IT brought crime into the community. The campaign ... proposed that people should 'get some answers' to key questions about illicit tobacco ...</i></p>	<p><i>2009 and March/April 2011, of 6084 and 4111 people, respectively; the first was across the three regions, but the second was confined to the NW and NE (see below), and hence, only data from the NW and NE regions are presented here (n=4105, NW/NE 2009). A representative sample of around 2300 people was attained and this was then supplemented with a boosted sample of around 1800 smokers; Stakeholder Interviews I: Nov-Dec 2009; Stakeholder Interviews II: Nov-Dec 2010. Stakeholder Interviews I: 16 interviews Stakeholder Interviews I: 9 follow-up interview + 5 others</i></p> <p>Date of data collection <i>Two independent cross-sectional surveys were carried out, in July 2009 and March/April 2011</i></p> <p>Study design <i>Pre / Post test surveys about two years apart Repeated Cross Sectional Qualitative ethnography</i></p> <p>Data collection method <i>Survey Hotline data (calls to Crimestoppers and Customs Hotline concerning illicit tobacco); Consumer Research</i></p>	<p>Intermediate outcomes Behavioural: Behaviour change Behavioural: Other</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes Other</p>
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		<p>Branding Logos: 'illegal tobacco' and 'keep it out'</p>	<p>(commissioned a market research company, used telephone number sampling and street interviews) Interviews Stakeholder Interviews with the Programme's Governance Board (comprising representatives from local and national enforcement agencies, regional health agencies, and marketing and communication professionals); 45 mins, face-to-face or telephone.</p>		
<p>Naughton (2015)¹⁵¹ OCCS: Fair</p>	<p>Health Topic Tobacco use</p> <p>Aim of study "To adapt a tailored short message service (SMS) text message smoking cessation intervention (MiQuit) for use without active health professional endorsement in routine antenatal care settings, to estimate 'real-world' uptake and test the feasibility of its use."</p> <p>Was Mass Media sole focus? No</p>	<p>Campaign setting England King's Mill Hospital (KMH), Sherwood Forest Hospitals NHS Foundation Trust, Sutton-In-Ashfield, Nottinghamshire</p> <p>Characteristics Campaign aim To promote uptake of the MiQuit text service by pregnant smokers. Duration of the programme "post hoc, an 'extended period' for activations, potentially reflecting a more realistic scenario, was used for comparison. This used all activation requests recorded for the period when activations were logged (approximately 9 months), using an 8-month period (January–August 2013) as the period of availability of materials that is, when pregnant women had direct access to the materials. MiQuit was not promoted</p>	<p>Study country England King's Mill Hospital (KMH), Sherwood Forest Hospitals NHS Foundation Trust, Sutton-In-Ashfield, Nottinghamshire</p> <p>Sample size n=1775 (6-month, strict), including n=499 smokers (25.3%); n=2356 (9-month, extended), including n=585 smokers (24.8%)</p> <p>Date of data collection January to August 2013 (6-month period Jan-Jun 2013 (Strict); 9-month period Jan-Sep 2013 (Extended - due to lag in packs handed out by midwives))</p> <p>Study design Post test "A single-site service evaluation ...</p>	<p>Sub-group analyses Other Pregnancy status</p>	<p>Media outcomes None reported</p> <p>Proximal outcomes Behavioural: Treatment seeking</p> <p>Intermediate outcomes None reported</p> <p>Distal outcomes None reported</p> <p>Process outcomes Other (Equivalent local Stop Smoking Service access rates)</p>

		<p><i>outside of this evaluation and individuals could only sign up using the shortcode and keyword combination unique to this study" (p4)</i></p> <p>Scope <i>Local (single site, antenatal care in one hospital)</i></p> <p>Target populations <i>pregnant smokers</i></p> <p>Cost <i>Described as "low-cost" ("The investigation provides an estimate of uptake for a very low-cost promotion of a cessation intervention that can be used without health professional instruction. ... the low cost of delivering MiQuit (approximately £3.20 per user based on trial data plus maintenance costs) and low dissemination costs to promote it would likely make it highly cost-effective." p6)</i></p> <p>Components</p> <p>Channels <i>Leaflets, posters, promotions pens and information cards. A single-sheet A5 leaflet describing MiQuit was inserted into maternity notes folders (given to all pregnant women at midwife 'booking' appointment) alongside 2 other health advice leaflets unrelated to smoking. A3 posters in the ultrasound clinic area and antenatal ward. 'Banner' pens and credit card-sized information cards in the</i></p>	<p><i>where initiation and subsequent discontinuation rates for a smoking cessation text message support system (MiQuit) were recorded among a cohort of pregnant women". It was promoted without "active health professional endorsement".</i></p> <p>Data collection method</p> <p>Other <i>Community midwife booking appointment attendance data (routine data for smoker information) were analysed with MiQuit activation requests</i></p>		
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		<p><i>ultrasound clinic area.</i></p> <p>Messages</p> <p><i>Informational ("In addition to providing information about the support provided and potential costs associated with activating MiQuit, the leaflet explained how to activate MiQuit support ... and how to discontinue text support." (p3))</i></p> <p>Targeting strategies</p> <p><i>Distribution of promotional materials in booking notes, and in ultrasound clinic area and antenatal ward.</i></p> <p>Branding</p> <p><i>MiQuit</i></p>			
<p>Richardson (2014a)¹⁵²</p> <p>OCCS: Good</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>To investigate the effects of different types of televised mass media campaign content on calls to the English NHS Stop Smoking helpline.</i></p> <p>Was Mass Media sole focus? Yes</p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim <i>We therefore evaluated the impact of different types of emotive content in televised mass media campaigns on rates of calls to the English National Health Service (NHS) Stop Smoking helpline, a country-wide smoking cessation service providing both telephone counselling support and information from trained advisers on other NHS services. No one 'campaign'; simply measuring calls based on when different campaigns ran Campaigns were categorised independently by two researchers using a theory-driven approach based on PRIME Theory</i></p>	<p>Study country England <i>calls to English quitline</i></p> <p>Sample size <i>1,227,189 calls.</i></p> <p>Date of data collection <i>between April 2005 and April 2010,</i></p> <p>Study design Repeated Cross Sectional</p> <p>Data collection method Other <i>secondary data analysis The outcome variable was generated using UK Department of Health data on calls to the English NHS Stop Smoking helpline between April</i></p>	<p>Sub-group analyses Message</p>	<p>Media outcomes Social cognition: Exposure</p> <p>Proximal outcomes Behavioural: Information seeking</p> <p>Intermediate outcomes <i>None reported</i></p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>

		<p><i>(West, 2009), and divided into three mutually exclusive categories according to their emotional content — “positive” (eliciting happiness, satisfaction or hope), “negative” (eliciting fear, guilt or disgust) or “neutral”, as previously described (Langley et al.,2013)</i></p> <p><i>Theoretical framework</i></p> <p><i>Campaigns were categorised independently by two researchers using a theory-driven approach based on PRIME Theory (West, 2009), and divided into three mutually exclusive categories according to their emotional content — “positive” (eliciting happiness, satisfaction or hope), “negative” (eliciting fear, guilt or disgust) or “neutral”, as previously described (Langley et al., 2013).</i></p> <p><i>Audience Exposure</i></p> <p><i>Exposure was quantified in GRPs (Gross Ratings Points), a standard advertising industry measure of campaign reach equivalent to the summed ratings of individual advertisements across multiple campaigns; giving a per capita measure of advertising exposure. For example, 400 GRPs could indicate that 100% of the population are exposed to four advertisements, or that 50% are exposed to eight advertisements. Individuals' actual exposure varies according to frequency, channel and time of television viewing. Per capita</i></p>	<p><i>2005 and April 2010, expressed as monthly count data.</i></p>		
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		<p>monthly exposure to all types of televised mass media campaigns ranged from 0 to 1135 GRPs, with a monthly mean of 305.2 GRPs. Out of a total of 18,618.9 GRPs, 8238.8 GRPs (or 44.2%) were designed to elicit negative emotions while 9589.9 (or 51.5%) were designed to elicit positive emotions.</p> <p>Components Channels TV Messages positive and negative emotive content Source government funded Other support materials some had helplines</p>			
<p>Richardson (2014b)¹⁵³</p> <p>OCCS: Good</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>"Using data from the International Tobacco Control (ITC) United Kingdom Survey, the present study sought to explore whether increased exposure to tobacco control campaigns results in increased probability of recall, and whether campaigns designed to</i></p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim ITC survey measure: "advertising or information that talks about the dangers of smoking, or encourages quitting on television" (not a single campaign, but "government-funded televised tobacco control mass media campaigns") Theoretical framework Not as reported by campaign designers, but the researchers categorised campaigns "using a coding</p>	<p>Study country England</p> <p>Sample size <i>n=1,968 adult smokers residing in England through four waves of the International Tobacco Control (ITC) United Kingdom Survey. Provided 3,932 observations over four waves of follow-up, implying a mean of 2.0 observations per participant. (Sample characteristics for all waves: Age 18–24y 4.5%, 25–39y 26.2%, 40–54y 40.1%, 55+y 29.2%; Female 56.6%, Male 43.4%; Level of Education Low 31.5%, Middle</i></p>	<p>Sub-group analyses Time to follow up Dose response relationship) for each Message</p>	<p>Media outcomes Social cognition: Awareness</p> <p>Proximal outcomes None reported</p> <p>Intermediate outcomes None reported</p> <p>Distal outcomes None reported</p> <p>Process outcomes None reported</p>

	<p><i>elicit negative emotions achieve higher rates of recall than positive campaigns. In addition, we assessed duration of recall by testing the association between recall and campaign exposure in the 1–3 and 4–6 month periods before survey."</i></p> <p>Was Mass Media sole focus? Yes</p>	<p><i>framework based on PRIME Theory [(plans, responses, impulses/inhibitory forces, motives and evaluations); West R: The multiple facets of cigarette addiction and what they mean for encouraging and helping smokers to stop. COPD 2009, 6:277–283.]"</i></p> <p>Duration of the programme April 2005 to March 2009</p> <p>Dose intensity "Per capita total monthly campaign exposure from April 2005 to March 2009 ranged from 0 to 1,051 GRPs, with a mean of 293.4. Total exposure over the period was 13,721 GRPs, including 809 GRPs for campaigns run by charities over the period studied. Although there was no discernible long-term upward or downward trend in GRPs, campaign exposure tended to peak in January of each year."(p2)</p> <p>Scope National (UK)</p> <p>Target populations Smokers (not specified in paper)</p> <p>Components</p> <p>Channels television</p> <p>Messages "Campaigns were categorised as having either "positive" (eliciting happiness, satisfaction or hope) or "negative" (eliciting fear, sadness, guilt, anger or disgust) emotional content." (p2) 42.4% of campaign GRPs</p>	<p>49.4%, High 19.1%)</p> <p>Date of data collection April 2005 to March 2009 (UK ITC Waves 4-7: 4 (2005–2006), 5(2006–2007), 6 (2007–2008), 7 (2008–2009))</p> <p>Study design Cohort / Longitudinal study ITC United Kingdom Survey, a prospective longitudinal cohort study Other Secondary data analysis (of ITC UK Survey and campaign reach data)</p> <p>Data collection method Survey Telephone survey: "Participants, who were aged ≥18 years and had smoked more than 100 cigarettes in their lifetime and provided informed consent, were interviewed annually by telephone between September and March of each survey year and asked a range of questions pertaining to smoking behaviour and attitudes [21]. After each survey, respondents received an incentive consisting of a £7 pharmacy voucher to encourage retention." Other Data "estimates of per capita exposure to government-run</p>		
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		<p>from campaigns featuring positive emotive content, 52.6% of campaign GRPs from campaigns featuring negative emotive content (5.0% classified as "neutral" and removed from the analysis).</p> <p>Source "government-funded televised tobacco control mass media campaigns, and ... those run by charities including the British Heart Foundation and Cancer Research UK" (p2)</p>	<p>televised tobacco control advertising (measured in GRPs, or Gross Rating Points [campaign reach]), which were categorised as either "positive" or "negative" according to their emotional content."</p>		
<p>Sims (2014)¹⁵⁵ [XXX]: [XXX]</p>	<p>Health Topic Tobacco use</p> <p>Aim of study To examine whether government-funded tobacco control television advertising shown in England between 2002 and 2010 reduced adult smoking prevalence and cigarette consumption.</p> <p>Was Mass Media sole focus? Yes</p>	<p>Campaign setting UK (no further breakdown)</p> <p>Characteristics Campaign aim "The United Kingdom has not shown anti-industry messages, focusing instead on both the negative health impacts of smoking and campaigns with positive messages about how to quit". Not a single campaign, but public sector tobacco control advertising (funded by government and charities). Duration of the programme January 2002 to April 2010 Dose intensity Time-series plot of gross rating points (GRPs) shows "during the period covered by the study ... [GRPs] are characterized by peaks and troughs with no clear secular trend"(Fig. 3a). Scope</p>	<p>Study country England</p> <p>Sample size n=81,256 adults (≥18y) living in England in the smoking prevalence analyses; n=19,488 adults (≥18y) living in England in the cigarette consumption analyses</p> <p>Date of data collection February 2002 to April 2010 (inclusive, no ONS survey in January 2002)</p> <p>Study design Repeated Cross Sectional Opinions and Lifestyle Survey (OS), a monthly cross-sectional survey Other Secondary data analysis of monthly cross-sectional surveys and campaign reach data "using</p>		<p>Media outcomes None reported</p> <p>Proximal outcomes None reported</p> <p>Intermediate outcomes Behavioural: Behaviour change</p> <p>Distal outcomes Improvement in population health status</p> <p>Process outcomes Cost effectiveness data</p>

		<p><i>National Cost</i> <i>"Government expenditure on television advertising campaigns from January 2002 to December 2009 was £78 million" (p992)</i></p> <p>Components Channels television Messages <i>"The United Kingdom has not shown anti-industry messages, focusing instead on both the negative health impacts of smoking and campaigns with positive messages about howto quit" (p987)</i> Source <i>"Department of Health-funded campaigns ... the Department of Health also funded Cancer Research UK and the British Heart Foundation to undertake media campaigns"</i></p>	<p><i>generalised additive models"</i></p> <p>Data collection method Survey <i>"The Opinions and Lifestyle Survey ... a monthly cross-sectional survey run by the Office for National Statistics ... is designed to be representative of adults living in private households throughout Great Britain. ... One adult aged 16 years and over is selected randomly from among all the over 16-year-olds in each household to be interviewed [face-to-face]." (p987)</i> Other <i>"Television viewer figures at the time when the advertisements are shown are collected by the Broadcasters' Audience Research Board via a metered panel. We use total adult GRPs for all TC advertisements shown on television per month as an indicator of exposure to TC television advertising." (p988)</i></p>		
<p>Sims (2016)¹⁵⁴ OCCS: Good</p>	<p>Health Topic Tobacco use</p> <p>Aim of study <i>To examine the effects of tobacco control television advertisements with positive and negative</i></p>	<p>Campaign setting England</p> <p>Characteristics Campaign aim <i>To change adult tobacco use, specifically to decrease smoking prevalence and cigarette consumption.</i> Duration of the programme</p>	<p>Study country England</p> <p>Sample size ~60,000 adults (≥18y) (~14,000 self-reported current smokers for cigarette consumption outcomes)</p>	<p>Sub-group analyses Message</p>	<p>Media outcomes None reported</p> <p>Proximal outcomes None reported</p> <p>Intermediate outcomes</p>

	<p><i>emotional content on adult smoking prevalence and cigarette consumption</i></p> <p>Was Mass Media sole focus? Yes</p>	<p><i>January 2004 to April 2010 inclusive; ads screened in 60 of the 76 months (negative emotive campaigns 19 months, positive emotive campaigns 17 months, both 24 months).</i></p> <p><i>Dose intensity</i> <i>Median exposure: when negative emotive campaigns occurred = 281 GRPs (range 2.6–708 GRPs), when positive emotive campaigns occurred = 242 GRPs (range 14.6–718 GRPs). "The intensity of each campaign type changed during the study period, with more negative emotive campaigns in the earlier years and positive emotive campaigns in later years" "Of the 26,222 GRPs during the study period, 53% were for negative emotive campaigns, 42% for positive emotive campaigns and the remaining 5% were emotionally neutral campaigns."</i></p> <p><i>Scope</i> <i>National</i></p> <p><i>Target populations</i> <i>Adult smokers in England</i></p> <p>Components</p> <p><i>Channels</i> <i>Television (basic information, either a phone number, website or text number that would lead to further information on quitting would appear on the screen).</i></p> <p><i>Messages</i> <i>Researchers "classified advertisements into three campaign types: (1) positive</i></p>	<p>Date of data collection <i>January 2004 to April 2010 inclusive</i></p> <p>Study design <i>Repeated Cross Sectional</i> <i>More specifically, an "analysis of monthly cross-sectional surveys using generalised additive models" (p21).</i></p> <p>Data collection method <i>Survey</i> <i>"The Opinions and Lifestyle Survey (OS) ... is a monthly cross-sectional [face-to-face] survey designed to be representative of adults living in private households throughout Great Britain." (p21)</i></p>	<p>Behavioural: Behaviour change</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes Cost effectiveness data</p>
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		<p><i>emotive campaigns if they evoked positive feelings about quitting (eg, pride, happiness, relief and satisfaction); (2) negative emotive campaigns if they evoked negative feelings about smoking (eg, worry, fear, disgust, guilt, anger, sadness); and (3) emotionally neutral campaigns (eg, campaigns designed to raise awareness of smoke-free legislation)".</i></p> <p>Source <i>"Negative emotive adverts ... were mostly testimonial or acted adverts with a very few showing graphic imagery ... Positive campaigns ... all were acted.";</i> Campaigns were government-funded (Central Office of Information and the UK Department of Health Tobacco Marketing Team) plus campaigns by Cancer Research UK and the British Heart Foundation funded by the Department of Health.</p>			
<p>Stautz (2016)¹⁵⁶ EPHPP: 1 Strong</p>	<p>Health Topic Alcohol use</p> <p>Aim of study <i>***The primary aim of this [online] pilot study is to assess whether exposure to alcohol warning advertising is effective in reducing the urge to drink alcohol, and whether affective responses to</i></p>	<p>Campaign setting UK (no further breakdown) (7 ads) Other Australia (4 ads), New Zealand (1), the Republic of Ireland (1), Sweden (1), and Iceland (1)</p> <p>Characteristics Campaign aim Not a specific mass media campaign. Described as "advertisements [that] were professionally produced,</p>	<p>Study country UK (no further breakdown)</p> <p>Sample size <i>N=152 18-25 year-old drinkers (≥1 alcoholic beverage per typical week); 50% female, 49.3% male, n=1 not reported); mean age 21.47 SD±1.31; 65.1% 'White British', 17.8% 'Any other white background'. Recruited from a UK online panel.</i></p>	<p>Sub-group analyses Other <i>heaviness of drinking</i></p>	<p>Media outcomes Social cognition: Credibility Social cognition: Attitudinal / emotional responses</p> <p>Proximal outcomes Social cognitive: Motivation</p>

	<p><i>advertising help to explain any such effect.** We predict that participants exposed to alcohol warning advertisements will report fewer urges to drink alcohol compared to those exposed to alcohol promoting or non-alcohol advertisements (H1), and that, if present, this effect will be mediated by affective responses (low pleasure and high arousal) to advertisements (H2). The second aim is to assess whether any effects of alcoholrelated advertising on urges to drink alcohol are stronger amongst heavier drinkers. We predict that heavier drinkers exposed to alcohol warning advertisements will report higher urges to drink compared to those exposed to non-alcohol advertisements</i></p>	<p><i>appeared to be relevant to young adults, and highlighted short-or long-term negative consequences of alcohol consumption" (p3)</i> Basis of programme design <i>"Categories [of message content and presentation style] were adapted from a study of obesity prevention advertisements [19 Dixon et al. BMC Public Health. 2015;15:804.], and were coded by the first author." (p3)</i> Duration of the programme <i>Selected ads were produced between 2006 and 2015, ads ranged from 30 to 69 seconds long.</i> Scope <i>National</i> Target populations <i>Ads selected for study on appearing "to be relevant to young adults". Two UK ads gender targeted (Know your limits (Male); Know your limits (Female)).</i></p> <p>Components Channels <i>video advertising (via tv or internet - sample were asked about their typical use of both channels)</i> Messages <i>"Categories of message content were: injury; short-term health effects (e.g. vomiting, loss of consciousness); long-term health effects (e.g. cancer); social consequences (e.g. embarrassment, offending friends); harm to others (e.g.</i></p>	<p>Date of data collection Not reported <i>the ads (stimulii) were selected in 2015 and the paper submitted in 2015</i></p> <p>Study design RCTs / Trials <i>A between-participants experimental design. Sample randomly assigned to 1 of 3 conditions (1. alcohol warning ads, 2. alcohol promoting ads, 3. non-alcohol ads) before completing a post-exposure survey</i></p> <p>Data collection method Survey <i>The study was completed entirely online. Participants gave informed consent and then completed a battery of questionnaires. Following the questionnaires, participants were presented with a random selection of six of 15 condition-specific advertisements. Following each advertisement, participants reported their current pleasure and arousal, and the degree to which they perceived the advertisement to be effective. After rating six advertisements, participants reported their urges to drink alcohol.</i></p>	<p>Intermediate outcomes None reported</p> <p>Distal outcomes None reported</p> <p>Process outcomes None reported</p>
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	<p>(H3). The third aim is to assess whether emotional responses to advertisements are associated with their perceived effectiveness. We predict that affective responses to alcohol warning advertisements (low pleasure and high arousal) will be associated with higher perceived effectiveness (H4). The fourth aim is to identify appropriate advertisements for use in a laboratory-based study on the impact of alcohol-related advertising on alcohol consumption in young adults." (p2)</p> <p>Was Mass Media sole focus? Yes</p>	<p>accidental physical harm, abuse, use of public services); and criminal behaviour (e.g. violence, being arrested)." (p3) "Categories of presentation style were: graphic (using shocking aversive images such as vomiting, injuries); depiction (acted scenes of intoxication); testimonial (real or acted description of events); and animated text (text corresponding with voiceover)." (p3) UK ads: 1. Know your limits (Male) 39 seconds Message content: Injury, social consequences Presentation style: Graphic, depiction 2. Another night wasted 40s Message content: Short-term health effects, social consequences Presentation style: Graphic, depiction 3. Tumour 40s Message content: Long-term health effects Presentation style: Graphic 4. Who is in control 69s Message content: Short-term health effects, social consequences Presentation style: Graphic, depiction 5. Superhero 43s Message content: Injury Presentation style: Graphic, depiction 6. Know your limits (Female) 40s Message content: Injury, social consequences Presentation style: Graphic, depiction 7. You wouldn't sober 40s Message content: Harm to others Presentation style: Animated text</p>			
<p>Sutherland (2013)^{135,157,158}</p>	<p>Health Topic Diet</p>	<p>Campaign setting UK (no further breakdown)</p>	<p>Study country England</p>	<p>Sub-group analyses Age</p>	<p>Media outcomes <i>None reported</i></p>

<p>OCCS: Good</p>	<p>Aim of study <i>The present study uses large nationally representative samples of households in England to assess whether discretionary salt use was affected by the national salt reduction campaign. This study uses large nationally representative samples of households in England to assess whether discretionary use of salt at the table was affected by the national salt reduction campaign.</i></p> <p>Was Mass Media sole focus? No <i>two pronged campaign - also looked to reduce salt in ready meals.</i></p>	<p>Characteristics Campaign aim <i>First, by a gradual reduction in the salt content of foods through engagement with the food industry on reformulation of industrially processed foods and, second, by increasing consumer awareness of the impact of salt on health via a public awareness campaign using a variety of media outlets to provide consumers with strategies to reduce their salt intake(3).</i> Duration of the programme <i>4 years - 2004-2008</i> Target populations <i>The public awareness campaign's main target group comprised women aged 25–65 years in social demographic groups C1, C2 and D, as women in the household are considered to be the main gatekeepers when it comes to food and health.</i></p> <p>Components Channels <i>The campaign involved television, radio, press and poster advertisements; leaflets, interactive activities at supermarkets, digital advertising, FSA website</i> Channel Interactivity <i>experiential activity at supermarkets (interactive activity involving quizzes, provision of information and product tasting);</i></p>	<p>Sample size <i>67 980 individuals answered the HSE salt behaviour question between 1997 and 2007</i></p> <p>Date of data collection <i>in the years 1997, 1998, 2003, 2005, 2006 and 2007.</i></p> <p>Study design Repeated Cross Sectional</p> <p>Data collection method Survey <i>Health Survey of England Data were obtained from repeated cross-sections of the Health Survey for England (HSE), an annual survey of a nationally representative sample of the general population living in households in England. Specifically, participants were asked to categorise their salt use at the table into one of four options: (1) 'generally add salt to food without tasting it first', (2) 'taste the food, but then generally add salt', (3) 'taste the food, but only occasionally add salt', or (4) 'rarely, or never, add salt at the table'</i></p>	<p>Gender Socio-economic status Race/Ethnicity Other <i>region of England</i></p>	<p>Proximal outcomes <i>None reported</i></p> <p>Intermediate outcomes Behavioural: Behaviour change, Behavioural: Sustained healthier behaviours</p> <p>Distal outcomes <i>None reported</i></p> <p>Process outcomes <i>None reported</i></p>
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		<p>Messages</p> <p><i>Phase 1 of the campaign featured ‘Sid the Slug’ and aimed to increase public awareness of the risks of high salt consumption. Phase 2, ‘Talking Food’, emphasised the 6 g/d salt target and encouraged consumers to ‘check the label’ for the salt content of individual foods. Phase 3, the ‘Full of It’ campaign, focused on informing consumers that 75 % of the salt they consume is already in the everyday foods they purchase; therefore, they should check the labels and choose options lower in salt. Phase 4 reinforced messages from the previous campaign phases and also highlighted foods with ‘hidden’ salt and offered practical solutions for reducing salt intake.</i></p> <p>Targeting strategies</p> <p><i>During the second and third phases of the campaign, some food companies and some NGO carried out work to help disseminate the campaign messages to hard-to-reach groups. This included, for example, educational and practical programmes such as cooking classes, tasting sessions and grocery shop tours. The target groups for the initiatives included black and minority ethnic groups, inner-city communities, young parents, Hindu and Sikh populations and housing association staff and residents</i></p> <p>Branding</p>			
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		<i>Sid the Slug; Talking Food; Full of it</i>			
<p>Notes to table: *EPHPP – Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies; OCCS US National Institutes of Health’s assessment tool for Observational Cohort and Cross-sectional Studies; CASP Qual – Critical Appraisal Skills Programme tool for qualitative studies.</p>					

Appendix 8 List of UK primary studies excluded from the rapid review at the full text assessment stage (Review D)

Adams E. 2012. "Walking Works! Evaluation of a workplace walking project in England". <i>Journal of Science and Medicine in Sport</i> 15:S236.	Intervention did not meet the mass media definition*
Ainsworth Hannah, Shah Sarwat, Ahmed Faraz, Amos Amanda, Cameron Ian, Fairhurst Caroline, King Rebecca, Mir Ghazala, Parrott Steve, Sheikh Aziz, Torgerson David, Thomson Heather, and Siddiqi Kamran. 2013. "Muslim communities learning about second-hand smoke (MCLASS): study protocol for a pilot cluster randomised controlled trial.". <i>Trials</i> 14:295.	Excluded on outcomes data
Ajay V S, Praveen P A, Millett C, Kinra S, and Prabhakaran D. 2012. "Role of mobile phone technology in tobacco cessation interventions". <i>Global Heart</i> 7(2):167-174.	Intervention did not meet the mass media definition*
Al-Alawy K, Roche T, and Alwali W. 2011. "Implementing public health in secondary care: A Rotherham perspective on strategy development and implementation". <i>Perspectives in Public Health</i> 131(3):137-143.	Intervention did not meet the mass media definition*
Allmark Peter, Tod Angela M, McDonnell Ann, Al-Alawy Khamis, Mann Kaye, Hollis Emma, Qutishat Dania, Williamson Marcus, and Iliff Alison. 2012. "Evaluation of the impact of a smoke-free home initiative in Rotherham, a deprived district in Northern England.". <i>European journal of public health</i> 22(2):248-51.	Intervention did not meet the mass media definition*
Anderson AS, Macleod M, Mutrie N, Sugden J, Dobson H, Treweek S, O'Carroll RE, Thompson A, Kirk A, Brennan G, and Wyke S. 2014. "Breast cancer risk reduction--is it feasible to initiate a randomised controlled trial of a lifestyle intervention programme (ActWell) within a national breast screening programme?". <i>The international journal of behavioral nutrition and physical activity</i> 11:156.	Intervention did not meet the mass media definition*
Anokye NK, Lord J, and Fox-Rushby J. 2014. "Is brief advice in primary care a cost-effective way to promote physical activity?". <i>British journal of sports medicine</i> 48(3):202-6.	Intervention did not meet the mass media definition*
Armitage A, Crosse C, and Bridger A. 2015. "Sex undressed: Developing a website for young people around sex and body image". BMJ Publishing Group. http://sti.bmj.com/content/91/Suppl_1/A84.1.full.pdf+html?sid=3b5d5d17-cc4a-4b79-9290-f87094b1e2a8 http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=72205819 .	Excluded on outcomes data
Author not found, and . 2016. "Safetxt:A randomised controlled trial of an intervention delivered by mobile phone messaging to reduce sexually transmitted infections (STI) by increasing sexual health precaution behaviours in young people (Project record)". <i>Health Technology Assessment Database</i> (3):.	Excluded on outcomes data
Aventin Aine, Lohan Maria, O'Halloran Peter, and Henderson Marion. 2015. "Design and development of a film-based intervention about teenage men and unintended pregnancy: applying the Medical Research Council framework in practice.". <i>Evaluation and program planning</i> 49:19-30.	Excluded on outcomes data
Baguley S. 2013. "Texting or talking: Which is the more effective intervention for hazardous drinking?". Royal Society of Medicine Press Ltd. http://std.sagepub.com/content/24/5_suppl/1.full.pdf+html http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=71565786 .	Intervention did not meet the mass media definition*
Bailey J, McCarthy O, Carswell K, Murray E, Rait G, Hart G, Nazareth I, Free C, French R, and Stevenson F. 2011. The sexunzipped website for sexual wellbeing for young people: Early results of a pilot online rct. Paper presented at 20th World Congress of Sexual Health Glasgow United	Excluded on outcomes data

Kingdom. Conference Start: 20110612 Conference End: 20110616, : Blackwell Publishing Ltd.	
Bailey Julia V, Pavlou Menelaos, Copas Andrew, McCarthy Ona, Carswell Ken, Rait Greta, Hart Graham, Nazareth Irwin, Free Caroline, French Rebecca, and Murray Elizabeth. 2013. "The Sexunzipped Trial: Optimizing the Design of Online Randomized Controlled Trials". <i>Journal of Medical Internet Research</i> 15(12):.	Excluded on outcomes data
Bailey Julia V, Webster Rosie, Hunter Rachael, Freemantle Nick, Rait Greta, Michie Susan, Estcourt Claudia, Anderson Jane, Gerressu Makeda, Stephenson Judith, Ang Chee Siang, Hart Graham, Dhanjal Sacha, and Murray Elizabeth. 2015. "The Men's Safer Sex (MenSS) trial: protocol for a pilot randomised controlled trial of an interactive digital intervention to increase condom use in men.". <i>BMJ open</i> 5(2):e007552.	Excluded on outcomes data
Bath R, O'Connell R, Lascar M, Ferrand R, Matin N, Basnett I, Apea V, Phiri E, Lynch J, Denholm T, Grant C, Hand J, Crawford-Jones A, O'Connell J, Oliver A, Pereira S, Tong W, Ahmad K, Young E, and Orkin C. 2014. "#TestMeEast@EuroHIVTestingWeek: A celebrity-endorsed, newsworthy NHS campaign across six hospitals to test 2500 patients (500/day) based in outpatients (OPD) and emergency departments (ED): The results". <i>3rd Joint Conference of the British HIV Association, BHIVA with the British Association for Sexual Health and HIV, and BASHH Liverpool United Kingdom. Conference Start: 20140401 Conference End: 20140404</i> 15:95.	Intervention did not meet the mass media definition*
Bath R, O'Connell R, Lascar M, Ferrand R, Strachan S, Matin N, Bassnet I, and Orkin C. 2016. "TestMeEast: A campaign to increase HIV testing in hospitals and to reduce late diagnosis". <i>AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV</i> 28(5):608-611.	Intervention did not meet the mass media definition*
Beeken R J, and Wardle J. 2013. "Public beliefs about the causes of obesity and attitudes towards policy initiatives in Great Britain". . http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=23866723 .	Excluded on outcomes data
Best C, Haseen F, van der Sluijs W, Ozakinci G, Currie D, Eadie D, Stead M, MacKintosh AM, Pearce J, Tisch C, MacGregor A, Amos A, Frank J, and Haw S. 2016. "Relationship between e-cigarette point of sale recall and e-cigarette use in secondary school children: a cross-sectional study.". <i>BMC public health</i> 16:310.	Did not examine one or more of the relevant health behaviours
Bhogal Manpal Singh, and Langford Robert. 2014. "Gender differences in weight loss; evidence from a NHS weight management service.". <i>Public health</i> 128(9):811-3.	Intervention did not meet the mass media definition*
Bird W. 2014. "Activating a whole community. Beat the Street". Elsevier Ltd. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=71772992 .	Intervention did not meet the mass media definition*
Blyth Annie, Maskrey Vivienne, Notley Caitlin, Barton Garry R, Brown Tracey J, Aveyard Paul, Holland Richard, Bachmann Max O, Sutton Stephen, Leonardi-Bee Jo, Brandon Thomas H, and Song Fujian. 2015. "Effectiveness and economic evaluation of self-help educational materials for the prevention of smoking relapse: randomised controlled trial.". <i>Health technology assessment (Winchester, and England)</i> 19(59):1-vi.	Intervention did not meet the mass media definition*
Boddington EL, and McDermott MR. 2013. "Predicting resistance to health education messages for cannabis use: the role of rebelliousness, autistic mastery, health value and ethnicity.". <i>Journal of health psychology</i> 18(2):157-66.	Intervention did not meet the mass media definition*
Bradshaw D, Hughes A, and Day S. 2013. "A novel service promotion campaign using the social media site Facebook". <i>Sexually Transmitted Infections</i> 89(2):104.	Excluded on outcomes data

Brady M, Nardone A, Buenaventura E, Qureshi F, Edwardes D, Kelly P, Ellis D, Ward P, and Gill N. 2014. "Home HIV sampling linked to national HIV testing campaigns: A novel approach to improve HIV diagnosis". Blackwell Publishing Ltd. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=71431836 .	Intervention did not meet the mass media definition*
Brennan Laura K, Brownson Ross C, Kelly Cheryl, Ivey Melissa K, and Leviton Laura C. 2012. "Concept Mapping: Priority Community Strategies to Create Changes to Support Active Living". <i>American Journal of Preventive Medicine</i> 43(5 supplement 4):S337-S350.	Excluded on outcomes data
Bromley H, Lloyd Williams F, Orton L, McGill R, Anwar E, Taylor Robinson D, O'flaherty M, Guzman Castillo M, Rayner M, and Capewell S. 2014. Using a novel framework to categorise public health nutrition actions in 30 European countries. Paper presented at EuroPREvent 2014 Amsterdam Netherlands. Conference Start: 20140508 Conference End: 20140510, : SAGE Publications Inc..	Excluded on outcomes data
Buckton CH, Lean ME, and Combet E. 2015. "'Language is the source of misunderstandings'--impact of terminology on public perceptions of health promotion messages.". <i>BMC public health</i> 15:579.	Excluded on outcomes data
Burton Jessica, Brook Gary, McSorley John, and Murphy Siobhan. 2014. "The utility of short message service (SMS) texts to remind patients at higher risk of STIs and HIV to reattend for testing: a controlled before and after study.". <i>Sexually transmitted infections</i> 90(1):11-3.	Intervention did not meet the mass media definition*
Buyuktuncer Z, Kearney M, Ryan CL, Thurston M, and Ellahi B. 2014. "Fruit and vegetables on prescription: a brief intervention in primary care.". <i>Journal of human nutrition and dietetics : the official journal of the British Dietetic Association</i> 27 Suppl 2:186-93.	Intervention did not meet the mass media definition*
Cameron David, Epton Tracy, Norman Paul, Sheeran Paschal, Harris Peter R, Webb Thomas L, Julious Steven A, Brennan Alan, Thomas Chloe, Petroczi Andrea, Naughton Declan, and Shah Itaf. 2015. "A theory-based online health behaviour intervention for new university students (U@Uni:LifeGuide): results from a repeat randomized controlled trial.". <i>Trials</i> 16:555.	Intervention did not meet the mass media definition*
Cameron LD, and Williams B. 2015. "Which Images and Features in Graphic Cigarette Warnings Predict Their Perceived Effectiveness? Findings from an Online Survey of Residents in the UK.". <i>Annals of behavioral medicine : a publication of the Society of Behavioral Medicine</i> 49(5):639-49.	Intervention did not meet the mass media definition*
Carswell Kenneth, McCarthy Ona, Murray Elizabeth, and Bailey Julia V. 2012. "Integrating Psychological Theory Into the Design of an Online Intervention for Sexual Health: The Sexunzipped Website". <i>Journal of Medical Internet Research</i> 14(6):.	Excluded on outcomes data
Cavill N, Muller L, Mulhall C, and Rutter H. 2011. Cycling demonstration towns: A cost-effective investment to promote physical activity. Paper presented at 18th European Congress on Obesity, ECO 2011 Istanbul Turkey. Conference Start: 20110525 Conference End: 20110528, : Blackwell Publishing Ltd.	Excluded on outcomes data
Clarke J, and Gill H. 2014. "I was planning on coming but the programme pushed me to do it": Staff response and clinic attendee reactions to participation of a UK sexual health service in a reality TV series. Paper presented at 2014 STD Prevention Conference Atlanta, GA United States. Conference Start: 20140609 Conference End: 20140612, : Lippincott Williams and Wilkins.	Excluded on outcomes data
Clarke J, and Gill H. 2014. "Not enough HIV stories!": Staff reactions to a UK sexual health reality TV series. Paper presented at 3rd Joint Conference of the British HIV Association, BHIVA with the British Association for Sexual	Linked to a previously excluded study

Health and HIV, BASHH Liverpool United Kingdom. Conference Start: 20140401 Conference End: 20140404, : Blackwell Publishing Ltd.	
Cobb NK, Jacobs MA, Saul J, Wileyto EP, and Graham AL. 2014. "Diffusion of an evidence-based smoking cessation intervention through Facebook: A randomised controlled trial study protocol.". <i>BMJ Open</i> 4(1):.	Excluded on outcomes data
Collins Marissa, Mason Helen, O'Flaherty Martin, Guzman-Castillo Maria, Critchley Julia, and Capewell Simon. 2014. "An Economic Evaluation of Salt Reduction Policies to Reduce Coronary Heart Disease in England: A Policy Modeling Study". <i>Value in Health : the Journal of the International Society for Pharmacoeconomics and Outcomes Research</i> 17(5):517-524.	Intervention did not meet the mass media definition*
Cooper Andrew J M, Dearnley Katie, Williams Kate M, Sharp Stephen J, van Sluijs , Esther M F, Brage Soren, Sutton Stephen, and Griffin Simon J. 2015. "Protocol for Get Moving: a randomised controlled trial to assess the effectiveness of three minimal contact interventions to promote fitness and physical activity in working adults.". <i>BMC public health</i> 15:296.	Excluded on outcomes data
Corcoran N, and Ahmad F. 2016. "The readability and suitability of sexual health promotion leaflets". <i>Patient Education and Counseling</i> 99(2):284-286.	Excluded on outcomes data
Dahl Stephan, Eagle Lynne, and Ebrahimjee Mustafa. 2013. "Golden Moves: Developing a Transtheoretical Model-Based Social Marketing Intervention in an Elderly Population.". <i>Social Marketing Quarterly</i> 19(4):230-241.	Excluded on outcomes data
Dawson J, Huikuri S, and Armada F. 2015. "Liverpool Active City 2005-2010: Increasing Population Physical Activity Levels Through Intersectoral Action.". <i>Journal of physical activity & health</i> 12(6):749-55.	Intervention did not meet the mass media definition*
Day S, and Hughes A. 2012. "A highly cost-effective and targeted service promotion campaign using the social media site Facebook". BMJ Publishing Group. http://sti.bmj.com/content/88/Suppl_1/A44.1.abstract?sid=fee051ab-1253-4653-8c6c-4ff121c44f6d http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=71383526 .	Excluded on outcomes data
de Visser RO, Wheeler Z, Abraham C, and Smith JA. 2001. "'Drinking is our modern way of bonding': Young people's beliefs about interventions to encourage moderate drinking". <i>PSYCHOLOGY & HEALTH</i> 28(12):1460-1480.	Excluded on outcomes data
de Vocht F, Higgerson J, Oliver K, and Verma A. 2011. "Incorporating uncertainty in aggregate burden of disease measures: an example of DALYs-averted by a smoking cessation campaign in the UK". <i>JOURNAL OF EPIDEMIOLOGY AND COMMUNITY HEALTH</i> 65(9):751-756.	Excluded on outcomes data
Derges Jane, Clow Angela, Lynch Rebecca, Jain Sumeet, Phillips Gemma, Petticrew Mark, Renton Adrian, and Draper Alizon. 2014. "'Well London' and the benefits of participation: results of a qualitative study nested in a cluster randomised trial.". <i>BMJ open</i> 4(4):e003596.	Intervention did not meet the mass media definition*
Dewhurst H, and Neild P. 2011. Attitudes, experience and expectations of health service users regarding nutritional advice and its source. Paper presented at Malnutrition Matters, Joint BAPEN and Nutrition Society Meeting Harrogate United Kingdom. Conference Start: 20111129 Conference End: 20111130, : Cambridge University Press.	Intervention did not meet the mass media definition*
Dixon Helen, Scully Maree, Cotter Trish, Maloney Sarah, and Wakefield Melanie. 2015. "Healthy Weight and Lifestyle Advertisements: An Assessment of Their Persuasive Potential". <i>Health Education Research</i> 30(4):569-579.	Excluded on outcomes data
Dobbie F, Hiscock R, Leonardi-Bee J, Murray S, Shahab L, Aveyard P, Coleman T, McEwen A, McRobbie H, Purves R, and Bauld L. 2015. "Evaluating Long-term Outcomes of NHS Stop Smoking Services (ELONS): a	Intervention did not meet the mass media definition*

prospective cohort study (Structured abstract)". <i>Health Technology Assessment Database</i> (3):.	
Dovey TM, Taylor L, Stow R, Boyland EJ, and Halford JCG. 2011. "Responsiveness to healthy television (TV) food advertisements/commercials is only evident in children under the age of seven with low food neophobia". <i>APPETITE</i> 56(2):440-446.	Intervention did not meet the mass media definition*
Eaton J W, Hallett T B, and Epstein H. 2012. "What might be the impact of sexual partnership "concurrency" behavior change communication campaigns?". <i>Sexually Transmitted Diseases</i> 39(11):899.	Intervention did not meet the mass media definition*
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Manyiwa Simon, and Brennan Ross. 2012. "Fear appeals in anti-smoking advertising: How important is self-efficacy?". <i>Journal of Marketing Management</i> 28(11-12):1419-1437.	Excluded on outcomes data
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Morgan G. 2012. "Health promotion for older people in Wales: Preliminary evaluation of the national service framework for older people". <i>International Journal of Health Promotion and Education</i> 50(1):45-49.	Intervention did not meet the mass media definition*
Mulka L, Lock E, Salim M, Cameron D, and Mann S. 2014. "Alcohol and sexual health: A pilot study of screening and brief intervention". <i>3rd Joint Conference of the British HIV Association, BHIVA with the British Association for Sexual Health and HIV, and BASHH Liverpool United Kingdom. Conference Start: 20140401 Conference End: 20140404</i> 15:35.	Intervention did not meet the mass media definition*
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Myers L B. 2014. "Changing smokers' risk perceptions--for better or worse?". <i>Journal of health psychology</i> 19(3):325-332.	Intervention did not meet the mass media definition*
Naughton F, Prevost AT, Gilbert H, and Sutton S. 2012. "Randomized controlled trial evaluation of a tailored leaflet and SMS text message self-help intervention for pregnant smokers (MiQuit)". <i>Nicotine & tobacco</i>	Intervention did not meet the mass media definition*


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Portman M, Aung S, Brigstock-Barron O, Hunt T, Doyle T, Smith A, Hirst J, and Evans A. 2013. "T'HIV'K goes North: Outcomes and experience of UK HIV Testing week in a northern UK city". <i>19th Annual Conference of the British HIV Association, and BHIVA 2013 Manchester United Kingdom. Conference Start: 20130416 Conference End: 20130419</i> 14:19.	Did not examine one or more of the relevant health behaviours
Portman M, Doyle T, Hill E, Hirst J, Smith A, Aung S, Sowerbutts H, Evans A, and Schoeman S. 2014. "National HIV testing week-a celebration!". <i>3rd Joint Conference of the British HIV Association, BHIVA with the British Association for Sexual Health and HIV, and BASHH Liverpool United Kingdom. Conference Start: 20140401 Conference End: 20140404</i> 15:113-114.	Did not examine one or more of the relevant health behaviours
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Rutten G M, Savelberg H H, Biddle S J.H, and Kremers S P.J. 2013. "Interrupting long periods of sitting: Good STUFF". <i>International Journal of Behavioral Nutrition and Physical Activity</i> 10:no pagination.	Intervention did not meet the mass media definition*
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Stepney M. 2014. "The rise and fall of 'girlsdrinkdiaries.com': Dilemmas and opportunities when creating online forums to investigate health behaviour". <i>Health and Place</i> 27:51-58.	Excluded on outcomes data
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Taylor Charlotte, Darby Helena, Upton Penney, and Upton Dominic. 2013. "Can a school-based intervention increase children's fruit and vegetable consumption in the home setting?". <i>Perspectives in public health</i> 133(6):330-6.	Intervention did not meet the mass media definition*
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Thomas E L, Ribera A P, Senye-Mir A, Greenfield S, and Eves F. 2015. "Testing messages to promote stair climbing at work". <i>International Journal of Workplace Health Management</i> 8(3):189-205.	Intervention did not meet the mass media definition*
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Ubhi Harveen Kaur, Michie Susan, Kotz Daniel, Wong Wai Chi, and West Robert. 2015. "A mobile app to aid smoking cessation: preliminary evaluation of SmokeFree28.". <i>Journal of medical Internet research</i> 17(1):e17.	Intervention did not meet the mass media definition*
Upton Dominic, Upton Penney, and Taylor Charlotte. 2013. "Increasing children's lunchtime consumption of fruit and vegetables: an evaluation of the Food Dudes programme.". <i>Public health nutrition</i> 16(6):1066-72.	Linked to a previously excluded study
Warriner J, Harbottle J, and James C. 2014. "National HIV testing week: Normalising HIV testing for atrisk communities through a yearly community/clinical campaign". Blackwell Publishing Ltd. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=71432112 .	Did not examine one or more of the relevant health behaviours
Warriner J, Harbottle J, Tooke B, and Mowlabocus S. 2014. "Reaching out online: Researching the benefits and challenges of an internet-based, sexual health community outreach model". Blackwell Publishing Ltd. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed12&NEWS=N&AN=71431881 .	Intervention did not meet the mass media definition*
West R, and Daniels D. 2015. "Sexual networking: Does targeting online sexually transmitted infection booking appointments to men who have sex with men on Grindr improve access to sexually transmitted infection testing services?". SAGE Publications Ltd. http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=72064159 .	Did not examine one or more of the relevant health behaviours
West R, Okecha E, and Forbes K. 2015. "Keeping "app" to date: Using geolocation apps to signpost to local sexual health services". BMJ Publishing Group. http://sti.bmj.com/content/91/Suppl_1/A32.3.full.pdf+html?sid=6a654289-7a63-4698-95e4-f7fa1b0c3d3b http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&AN=72205695 .	Did not examine one or more of the relevant health behaviours
Wilsher S H. 2013. "The impact of emotional health on fruit and vegetable consumption in young men: A qualitative study". <i>Nutrition Society Summer Meeting 2013 Newcastle-upon-Tyne United Kingdom. Conference Start: 20130715 Conference End: 20130718</i> 72:E206.	Intervention did not meet the mass media definition*

Withall J, Jago R, and Fox K R. 2011. "Who attends physical activity programmes in deprived neighbourhoods?". <i>Health Education Journal</i> 70(2):206-216.	Linked to a previously excluded study
Withall J, Jago R, and Fox K R. 2012. "The effect a of community-based social marketing campaign on recruitment and retention of low-income groups into physical activity programmes - a controlled before-and-after study". . http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10b&NEWS=N&AN=23031359 .	Intervention did not meet the mass media definition*
Witzel TC, Guise A, Nutland W, and Bourne A. 2016. "It Starts With Me: Privacy concerns and stigma in the evaluation of a Facebook health promotion intervention". <i>SEXUAL HEALTH</i> 13(3):228-233.	Excluded on outcomes data
Wressell A, Twaites H, Taylor S, Hartland D, and Gove-Humphries T. 2014. "Saving Lives through visual health communication: a multidisciplinary team approach.". <i>Journal of visual communication in medicine</i> 37(3-4):81-90.	Did not examine one or more of the relevant health behaviours
Wrieden WL, and Levy LB. 2016. "'Change4Life Smart Swaps': quasi-experimental evaluation of a natural experiment.". <i>Public health nutrition</i> 19(13):2388-92.	Intervention did not meet the mass media definition*
Xiao D, Chen Z, and Wang C. 2013. "Effects of a short-term mass-media campaign against smoking". Lancet Publishing Group (Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom). http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013786893 .	Intervention did not meet the mass media definition*
Yong HH, Borland R, Cummings KM, Hammond D, O'Connor RJ, Hastings G, and King B. 2011. "Impact of the removal of misleading terms on cigarette pack on smokers' beliefs about 'light/mild' cigarettes: cross-country comparisons". <i>ADDICTION</i> 106(12):2204-2213.	Intervention did not meet the mass media definition*
Yong HH, Borland R, Thrasher JF, Thompson ME, Nagelhout GE, Fong GT, Hammond D, and Cummings KM. 2014. "Mediational Pathways of the Impact of Cigarette Warning Labels on Quit Attempts". <i>HEALTH PSYCHOLOGY</i> 33(11):1410-1420.	Intervention did not meet the mass media definition*
<p>Notes to table: List excludes the citations for N=48 studies that were not conducted in the UK.</p> <p>*Eligible: A mass media campaign broadcast using: television, radio, cinema, online broadcasting, newspapers and magazines, leaflets/booklets, direct mail, outdoor advertising, text messaging, email and digital media, including websites and banner ads. Ineligible: (a) interventions involving person-to-person contact, requiring active engagement before receipt of the message (e.g. alcohol screening questions) rather than passive message exposure, or online treatment or self-help programmes. (b) studies in which a baseline measure is used to tailor a subsequent mass media message. (c) studies testing campaign messages, rather than assessing implemented campaigns intended to reach large numbers of people. Exclude studies of messages taken from an implemented campaign but delivered and evaluated outside of that campaign e.g. in laboratory conditions. (d) studies of multi-component interventions if they do not assess the specific effects of a mass media component. (e) studies assessing the impact of advertisement bans. (f) studies of social norms campaigns unless it is evident from the information available that a mass media channel was used. If an intervention is described only as a social norms or social marketing campaign and there is no information indicating the use of mass media channels then it will be ineligible for inclusion. (g) studies of obligatory health warnings (e.g. on pack health warnings; point-of-sale health warnings); evaluating policies rather campaigns.</p>	

Appendix 9 Event flyer for 'Using the mass media for public health: what's the evidence?' stakeholder event, September 2017






Using the mass media for public health: what's the evidence?

How effective are mass media campaigns at influencing health behaviours?
Are they more effective with certain groups of people than others?

What are the characteristics of effective campaigns?
What do national, regional and local commissioners of campaigns need to know?

This seminar pulls together findings from a two year NIHR-PHR funded project examining the effectiveness of mass media campaigns across six key health behaviours: alcohol use, diet, illicit drug use, physical activity, sexual health and smoking.

Using the mass media for public health: what's the evidence?







Thursday 28th September 2017, 12-4pm
Iris Murdoch Building, University of Stirling
FREE

Presentations include:

- **Developing and using logic models** Professor James Thomas, EPPi Centre, University College London
- **Outcomes and costs: mass media campaigns** Dr Vittal Katikireddi, University of Glasgow, and Dr Tessa Langley, University of Nottingham
- **Public health mass media campaigns on alcohol** Professor Sarah Lewis and Ben Young, University of Nottingham
- **What makes a successful mass media campaign? Focus on characteristics** Dr Shona Hilton, University of Glasgow
- **Gaps and opportunities: what our reviews tell us about future research on mass media campaigns for public health** Martine Stead, University of Stirling
- **The future for mass media campaigns** Prof Linda Bauld, University of Stirling

Please RSVP to Kate Massie, Kathleen.Massie@stir.ac.uk if you would like to attend

The study was funded by the National Institute of Health Research Public Health Research Programme, Project Number 13/163/17

Appendix 10 Agenda for 'Using the mass media for public health: what's the evidence?' stakeholder event, September 2017

Mass Media for Public Health Messages: End of Study Event

Date: September 28th 2017
Venue: Iris Murdoch Building, University of Stirling
Time: 12-4pm

Agenda

Chair: Professor Linda Bauld, Institute for Social Marketing, University of Stirling

12:00 - 12:30 Sandwich lunch on arrival

12:30 - 12:45 Background to the study and examples of campaigns – Professor Linda Bauld, University of Stirling

12:45 - 13:00 Developing and using logic models – Professor James Thomas, EPPI Centre, University College London

13:00 - 13:20 Outcomes and costs: mass media campaigns – Dr Vittal Katikireddi, University of Glasgow and Dr Tessa Langley, University of Nottingham

13:20 - 13:40 Public health mass media campaigns on alcohol – Professor Sarah Lewis and Ben Young, University of Nottingham

13:40 - 14:15 Discussion in small groups: what does the evidence tell us about the effective use of mass media?

14:15 - 14:35 Coffee

14:35 - 15:00 What makes a successful mass media campaign? Focus on characteristics – Dr Shona Hilton, University of Glasgow

15:00 - 15:15 Gaps and opportunities: what our reviews tell us about future research on mass media campaigns for public health – Martine Stead, University of Stirling

15:15 - 15:45 Discussion in small groups: priorities for future monitoring, evaluation and research

15:45 - 16:00 Summing up – Professor Linda Bauld, University of Stirling

The study is funded by the National Institutes for Health Research, PHR project 13/163/17