

# Executive summary

## Volume 3 Changing food behaviour

This report:

1. Outlines the development of behaviour change strategies
2. Examines best practice in changing food behaviour
3. Reviews interventions that have been carried out in relation to key nutrition and food safety behaviours and outlines factors that may promote successful behaviour change
4. Develops recommendations for best practice in food and health communication based on current knowledge.
5. Identifies research gaps and communications priorities.

Amongst health communicators, the problems associated with facilitating behavioural change have been acknowledged and are continually debated. Chapter 1 of this report outlines a broad overview of behavioural change strategies and communications techniques for eliciting food safety and nutrition-related behavioural change while Chapter 2 offers a comprehensive review of intervention studies with a view to identifying success factors.

## Approaches to behaviour change – an evolution

Since the 1950s there has been an acceleration in the evolution of behavioural change communication. Health communicators have moved from a primary preoccupation on individual choices towards the acceptance of a complex matrix of factors that determine nutritional or food safety behaviours. This over-simplistic view that the individual has complete control of the behaviour they adopt is no longer assumed as it neglects to consider how social constructs impact on behaviours. It is now recognised that behaviours are a result of many influences: the general culture and environment into which we are born; the day-to-day culture in which we live and work; the groups, subgroups and individuals with whom we interact; and our own personal emotions, beliefs, values and attitudes, all of which are

influenced by these wider factors. This recent change in perspective has catalysed the adoption of a multifaceted approach to behavioural change.

The current review has been divided into two parts, which reflect the planning and implementation of communication for behaviour change. The first half maps the evolution of behavioural change communication; introduces the role of theory and discusses the four dominant strategies which are used to facilitate food-related change namely health promotion, risk communication, social marketing and more recently, behavioural economics. The second half examines the techniques used to communicate behavioural change within any of the preferred strategies. Practical examples are used to illustrate the innovative communication approaches that have been adopted to tackle food safety and nutritional issues.

## Current approaches to behavioural change

The behavioural change literature is dominated by three widely accepted frameworks; health promotion; risk communication and social marketing. In recent years a ‘Nudge’ or ‘libertarian paternalistic’ approach from behavioural economics has grown in prominence. However, to date it is a lesser used approach in relation to food safety and healthy eating. This report seeks to summarise the key characteristics of each approach and identify the impact they have had on the adoption of desirable food safety and nutrition behaviours.

This report extensively discusses social marketing, which is reflective of **safefood**'s commitment to the adoption of this approach to guide and inform the development of campaigns. Social marketing has been heralded as one of the most developed public health communication strategies, and as an innovative approach that has moved away from health education and social advertising strategies. Social marketing as a discipline seeks to bridge the gap between intention and behaviour through voluntary behavioural change. It is not a theory but a framework that has developed from other disciplines such as psychology, sociology and communication.

Like health promotion, social marketing as a strategy integrates many theories and approaches to promote behavioural change. Where it differs however, is its emergence as a discipline from traditional commercial marketing practices to address societal problems. Social marketers use central tenants such as ‘exchange theory’ to develop successful campaigns; ‘exchange’ in this context means that both parties need to receive something of value for any change to occur. By identifying barriers to change, positive behaviours can be ‘packaged’ to overcome difficulties whilst highlighting value to the individual.

## **Communicating for behavioural change**

Each of the behavioural change strategies discussed are supported by a wide range of communication techniques in a variety of settings. This report identifies the most widely used techniques, ranging from health education to media advocacy, whilst discussing the role they play in facilitating positive behavioural change. Any of the techniques described are adaptable depending on the overall goals and objectives of the campaigns. However, it also should be acknowledged that within this chapter there is greater emphasis on nutrition-related messages, which reflects the scarcity of published information on food safety communication campaigns.

Communicators of nutrition and food safety messages have the opportunity to use multiple formats to target consumers. Traditional mass media tools such as radio, television, billboards, and print forms such as posters, leaflets, newspapers, magazines and education curricula are now accompanied by new media technologies such as the internet, mobile and digital communication. Techniques such as social advertising, for example public service announcements, have been replaced with these more proactive tools, as a call to action has become a key part of message exposure. This section describes in detail some of the most widely used communication techniques implemented through behavioural change strategies and how they have evolved to engage with a changing society.

## **Identifying a best practice approach**

There is no universal solution to addressing current and arising food safety and nutritional issues. Therefore, there is a greater need to tackle complex problems through a more integrated approach and effect behavioural change through a co-ordinated effort. Future successful strategies should incorporate multiple stakeholders working simultaneously in various sectors and settings, and refocus on the influence of environmental forces in addition to changing behaviours of the individual. Theories such as the Social Cognitive Theory have long proposed this approach, emphasising the internal and external factors that impact on our behaviour. Behavioural change communicators need to recognise how these factors or forces interact with each other to impact on individual behaviour and present adequate solutions.

The evidence within this report emphasises how food safety and nutritional behavioural change communication is continuing to respond to a changing environment. For behavioural change to continue to take effect, communicators need to be flexible, adopting principles from more established approaches such as health promotion and risk communication with more contemporary strategies such as behavioural economics and the 'Nudge' theory. This flexibility should not be limited to the strategic approach adopted; it should also be reflected in the communication techniques adopted. For example,

mass media or media advocacy can be more effective with certain audiences, as would a different setting. Therefore, knowing your intended audience will be paramount in campaign success.

In response to the need for a more integrated, partnership approach behavioural change strategies should incorporate various types of stakeholders working in partnership from within and across different levels (including individual, communities and population) for a common objective. Strategies need to take a multifaceted approach to behavioural change, examining both prevention and treatment of complex behavioural issues. In this regard, public policy will play a major role in behavioural change in the future, focusing on implementation within and across systems at each level in order to restore this balance.

## **A review of behaviour change interventions in food safety and nutrition**

As part of **safeFood**'s research on food-related behaviour change, an assessment of the effectiveness of food safety and nutrition interventions was also carried out. This review provides critical insight into the achievements and limitations of such research, including the identification of effective planning, implementation and evaluation strategies, ultimately providing direction for future funding, development, and collaboration. The current global obesity epidemic highlights the importance and priority of related health promotion interventions. Likewise, consumer food poisoning and the spread of foodborne infectious disease through cross-transmission represent considerable threats to public health. Research needs to be appropriately directed in order to achieve effective and sustainable changes.

An in-depth literature search was conducted using online databases that included PubMed, Web of Knowledge (including Web of Science and ISI database) and PSYCINFO. The electronic search was supplemented by a review of relevant bibliographies and consultation with experts. Documents in English were considered and sourced from various countries: United States of America; Canada; Wales; Northern Ireland; Scotland; New Zealand; Australia; Republic of Ireland; Israel; Netherlands; Germany; Austria; Switzerland; Sweden; Finland; Turkey; England; Denmark; Norway; China; Italy. Studies conducted between 1985 and 2010 were examined. Of these, roughly 14 per cent reported on food safety interventions; 86 per cent concerned nutrition. Two dietary interventions were found from the Republic of Ireland; 0 from Northern Ireland. One food safety intervention study was found for the island of Ireland. The intervention studies were organised into categories of obesity prevention, obesity treatment/weight loss, salt, fruit and vegetables, biological risks, unhealthy foods, mode of provision and fat. One intervention regarding technological consumer risks was found; there were none found regarding chemical consumer risks. A great deal of fruit and vegetable and obesity prevention interventions were found, yet there was a lack of comparable research for food safety, salt and reduction of unhealthy foods (soft drinks, treat foods, etc.). Commissioning bodies for the studies included the British Broadcasting Corporation (BBC), the Food Standards Agency UK (FSA), the Institute for Social

Marketing (ISM), the National Institute for Health and Clinical Excellence (NICE), **safefood**, the United States Department of Agriculture (USDA) and the World Health Organisation (WHO). For a full list of commissioning bodies and study details, please refer to the interventions database on [www.safefood.eu](http://www.safefood.eu).

## **Do nutrition and food safety interventions work?**

The vast majority of food safety and nutrition studies reported change in a variety of populations and settings, suggesting that interventions have the capacity to improve consumer diet and food safety behaviour. That being said, there still exists a lack of high-quality evidence and, although progress is being made, guidance for both researchers and practitioners is insubstantial. Intervention planning, implementation and evaluation trends provide insight into the limitations and strengths of the available literature. Table 1 outlines the methodological feature, target groups and intervention settings that were examined.

**Table 1: Intervention planning and implementation trends**

<b>Methodological features</b>	<b>Target Groups</b>	<b>Intervention setting</b>
Theories and techniques	Age	Workplace
Social marketing approaches	Educational attainment	School
Ethics	Ethnicity and at-risk/minority groups	Home
Sample selection		Rural versus urban
Survey design		Supermarkets, restaurants, canteens and point-of-purchase
Peer educators		Group settings
Creativity		Primary health care settings
Situational factors/timing		
Intervention adherence		
Educational component		

Overall, intervening simultaneously at an individual and environmental level is more likely to bring about sustained change. Multi-component campaigns that implement change in a variety of different settings show most promise for future research.

### **Intervention evaluation trends**

A variety of outcome measures were examined in the interventions, including blood cholesterol levels, spending habits, hand washing frequencies, participant Body Mass Indexes (BMIs) and dietary intakes of salt, fruits and vegetables, and fat. While the importance of the use of biochemical and anthropometric measurements was often noted, less reliable measures, such as self-reported questionnaires, were frequently used as methods of evaluation.

It is becoming increasingly recognised that interventions need to consider multiple outcome measures in their evaluation strategies. Studies should also be realistic in their aims and objectives and consider immediate outcomes, such as changes in knowledge or attitudes, because many interventions have been evaluated on behaviour change alone and have consequently been labelled as ineffective. Multi-component intervention designs are also often used, but the different levels are not always compared, subsequently leaving the most effective unidentified. Furthermore, data on “unsuccessful” interventions are often kept out of the public domain. The publication and sharing of information amongst researchers and practitioners is of great importance. It is essential that the evaluation of studies has due emphasis in future planning.

Overall, it was difficult to find studies that exemplified recommended evaluation practices. Despite the public health emphasis on obesity worldwide, of note, there is currently insufficient high quality evidence for effective obesity prevention and treatment interventions. Although many countries have implemented recommendations for best weight management clinical practice, international guidelines for the evaluation of dietary interventions are lacking. The diversity of intervention designs and consequential evaluation methods are noted, and evaluation needs to be flexible and adaptable, yet a general evidence-based framework is still achievable.

One such framework for weight management interventions is that produced by the National Obesity Observatory in the United Kingdom. The framework outlines three main types of evaluation: formative evaluation, process evaluation and impact/outcome evaluation. The authors state that the evaluation types are complementary and should all be conducted at appropriate stages in a project’s cycle.

## **Characteristics associated with effectiveness**

This review clearly demonstrates that more research is warranted on effective interventions for food-related behaviour change. Collaboration and efficient planning at multiple levels is urgently required for societal change. Very few published food safety and dietary intervention studies are currently available for the island of Ireland. It is hoped that policy makers, researchers and health practitioners on the island will use this review to help plan, implement and evaluate future studies. Dietary and food safety interventions are lacking in quantity and quality, but there is promise of consumer behavioural change and programme effectiveness. The intervention planning, implementation and evaluation information presented throughout this chapter should serve as a foundation on which future research and guidelines develop. Study characteristics included in the most effective planning, implementation and evaluation strategies for dietary and food safety interventions are listed below and followed by recommendations for further research and communications.

### **Planning and implementation**

- Interventions should be multifaceted (involving family, school, workplace, policy, community, etc).
- Longitudinal design is of value.
- Intervening simultaneously at an individual and environmental level is more likely to bring about sustained change.
- Interventions should have a clearly stated theoretical basis.
- Targeting both specific and general groups has been effective, yet enhanced effect is seen with clearly defined target groups.
- Consultation with community leaders and professional disciplines should occur prior to intervention administration.
- An availability and wide distribution of intervention materials is beneficial.
- Intervention curriculum and materials are most effective when they are culture-specific and tailored to the specific group involved.
- Creativity is an important factor in intervention design.
- Timing factors (such as summer holidays or employee redundancies) should be considered when planning an intervention.
- Dietary interventions are more successful when the participants have an increased personal time commitment to the project.
- Implementing an educational intervention component has been successful for both dietary and food safety interventions.
- The impact of dietary interventions is often greater for the oldest and youngest participants.
- Targeting a specific age bracket is often a successful intervention method.
- Improving the quality of the location of food within stores has been shown to increase the sale of fruits and vegetables.
- Increasing access to healthier foods by opening supermarkets in inner-city areas can be effective.
- Parental involvement is an important factor in promoting sustainable changes during early childhood.
- Participants with higher levels of educational attainment often show the greatest capacity for behavioural and attitudinal change in dietary and food safety interventions.
- Problem-solving techniques and motivational interviewing are important elements in maintaining long-term weight loss among minority groups.
- Interventions should provide or work within a supportive environment.
- The preschool setting merits significant attention in future research.

- Food safety promotion methods such as community-based education programmes, hand washing promotion and food-handler training were all deemed useful (194, 248, 252).
- Trusted and recognised community workers (i.e. peer leaders) are effective vehicles for intervention implementation.
- Dietary interventions should provide increased availability, variety, taste opportunities and convenience of food.
- Liberal thinking around study design is recommended; RCTs are not always the most effective option and may not be practical at a community level.

## **Evaluation**

- Long-term evaluations and follow-ups are important and should be included in the study design.
- Intervention clinical outcomes should be addressed in addition to the commonly measured behavioural outcomes.
- Interventions should consider multiple outcomes in their evaluation strategies.
- Focus groups, interviews and community/expert steering groups should be an aspect of project evaluation.
- Intervention studies should secure adequate funding for evaluation prior to programme implementation (at least 10 per cent of total budget).
- Cost-effectiveness and cost-utility analyses should be performed.
- Measurement tools should be valid and reliable.
- Appropriate statistical analyses should be used.
- An evaluation partnership between evaluators and practitioners is recommended.
- Project managers should employ external independent researchers to evaluate intervention effectiveness.
- Evaluation should be based on an evidence-based framework, such as that produced by the National Obesity Observatory in the United Kingdom.
- Formative, process and impact/outcome intervention evaluations should be conducted.
- “Toolkits” of evaluation for obesity prevention and treatment interventions should be considered.

## Recommendations

### Research recommendations for communicating behaviour change and developing interventions on the IOI

Knowledge gap	Public health implication(s)	Recommendation/solution
<b>Recommendations relating to interventions</b>		
A lack of research on effective intervention on the IOI and a lack of food safety intervention research internationally.	Poor understanding of effective food safety behaviour change.	<ol style="list-style-type: none"> <li>1. Conduct intervention studies to promote improved food safety practice.</li> <li>2. Research needs to be published and shared.</li> <li>3. Methods to address bias in publishing positive intervention outcomes are needed.</li> </ol>
There is a lack of well-planned and evaluated interventions.	<ol style="list-style-type: none"> <li>1. Poor intervention outcomes.</li> <li>2. Ineffective use of health promotion funding.</li> </ol>	<ol style="list-style-type: none"> <li>1. International guidelines for the evaluation of dietary interventions are needed.</li> <li>2. Budget and resources are required for thorough planning and evaluation.</li> <li>3. An advisory resource for practitioners should be created and distributed.</li> <li>4. Opportunities for training in evaluation should be provided.</li> </ol>
Little is known about the sustainability of interventions over time.	Poor sustainability may result in ineffective behaviour change.	<ol style="list-style-type: none"> <li>1. Evaluate sustainability of all intervention projects.</li> <li>2. Methods to increase cost-effectiveness are needed.</li> </ol>
The evaluation of different levels within multi-component	1. Potential to isolate key measures for	1. Include multi-level intervention in study design.

interventions is lacking.	effective behaviour change.  2. Potential to identify synergistic effects of different interventions.	
Attracting the co-operation of individuals who refuse participation remains a major setback in food safety and nutrition interventions, as is participant adherence.	May result in bias or non-significant results.	Methods to increase participation and adherence are needed.
Poor understanding of the effects of sociodemographic factors on intervention outcome.	Improved segmentation could enhance intervention effectiveness.	Additional research is needed to determine age, gender, marital status, family size/sibling number and ethnicity influences on intervention effectiveness.
Design effects, such as control group improvements, are not well understood.	Difficulty in assessing intervention effectiveness.	Further research is needed on control group inclusion in intervention design.
Lack of data on point-of-purchase interventions.	Potential to influence food choice at the point of decision.	More information is needed on the effectiveness of point-of-purchase interventions in retail and catering settings.
Evidence of effectiveness of multimedia-based interventions in rural and at-risk populations.	New media has potential to reach hard-to-reach audiences.	Future studies should explore the use of new forms of media.
Lack of information on interventions in unemployed individuals.	Unemployed individuals may constitute an important at-risk group.	More research should address food safety and dietary interventions for unemployed persons who cannot be reached in traditional settings.

Interventions in religious groups have shown promise.	Religious community groups offer existing structures within which to develop behaviour change interventions.	Replication of interventions in religion based community group within the IOI context merits investigation.
Dietary interventions are usually more effective for individuals of normal weight, rather than those who are overweight or obese at baseline.	Interventions to target obesity may be ineffective.	More research is needed to target overweight and obese individuals.
<b>Research recommendations relating to communicating for behaviour change</b>		
Further research is needed on best practice in risk communication, including the role of trust.	Potential to enhance consumer confidence, particularly during crises.	<ol style="list-style-type: none"> <li>1. Methods to enhance trust in institutions responsible for food risk communication in the IOI should be investigated further.</li> <li>2. The use of the internet and social media in risk communication should be investigated further.</li> </ol>
The use of behavioural economics or 'Nudge' techniques in food-related behaviour change has not been thoroughly evaluated.	'Nudging' may constitute one important route for promoting behaviour change.	The use of behavioural economics in food-related behaviour change merits further investigation.
Research associated with food safety behavioural change is limited and could benefit from the use of health promotion and social marketing techniques, which rely on a customer-focused and insight-driven approach.	Low evidence base for food safety behaviour change.	Conduct studies on determinants and barriers to safe food-related behaviour.
The effective use of social media in promoting food related health has not been investigated.	Major increase in public usage means this presents a potentially important channel for promoting behaviour	Studies on the use of social media for food-related behaviour change are warranted, particularly weight management.

	change.	
Little evaluation of settings-based policies for promoting food safety and healthy eating on IOI.	Difficult to assess impact of policy measures.	Evaluation of settings based policies are required (schools, preschool, catering, work place).
While health promoters have been using mass media to communicate health messages for decades, relatively little research exists regarding its effectiveness.	Low ability to assess effectiveness of mass media communication.	1. More evaluation of campaigns needed. 2. Need for a template for reporting evaluations of mass media campaigns.
Partnerships give organisations the opportunity to combine resources and capabilities to promote behaviour change.	Partnership approaches have the potential to enhance effectiveness of multilevel programmes for behaviour change.	Partnership approach needs further evaluation.

#### Recommendations for interventions and communication of behaviour change on the IOI

<b>Priorities for communication/intervention</b>	<b>Public health implication(s)</b>	<b>Recommendation/solution</b>
The review of food safety and nutrition interventions in Chapter 2 outlines effective characteristics of interventions.	Potential to improve outcome of interventions.	Future studies should consider the characteristics of effectiveness when planning, implementing and evaluating identified in Chapter 2.
Partnerships give organisations the opportunity to combine resources and capabilities to tackle food safety and nutrition issues.	Partnership approaches have the potential to enhance effectiveness of multilevel programmes for behaviour change.	1 .Innovative approaches are needed to achieve this synergy between resources and expertise, particularly in the area of health.  2. The utilisation of public-private partnerships, which has the potential to support

		health professionals to facilitate behavioural change, should be explored.
For behavioural change to continue to take effect, communicators need to be flexible adopting principles from more established approaches such as health promotion and risk communication with more contemporary strategies such as behavioural economics.	Drawing learnings from a wide variety of disciplines may result in improved intervention design, implementation and evaluation.	Measures to change food-related behaviour must draw on best practice from a wide variety of disciplines including health promotion, risk communication, social marketing and behavioural economics.
Resource allocation needs to be analysed with a focus on a comprehension of the complex relationship between the individual and their environment.	A wide understanding and targeting of the factors affecting behaviour change may enhance effectiveness.	Upstream social marketing measures should be included to change the wider environment and to create supportive environments, with downstream measures aiming to change individual behaviour.
Best practice in social marketing has already been established (see Volume 3, Chapter 1, Section 1.8).	Use of existing knowledge base on effectiveness is essential for successful behaviour change.	<p>1. It is essential that formative research in programme development, monitoring and evaluation are implemented.</p> <p>2. Behavioural change communications need to be evaluated on a short-, medium- and long-term basis, not only to measure impact and outcome but also to assess the techniques adopted.</p>
Health literacy remains a barrier to health improvement for many people.	Vulnerable groups may be particularly affected.	Measures to improve health literacy are needed.
Continued emphasis on a settings-based	Established international	Expansion of the community

