

Executive summary

Volume 1 Food safety behaviour on the island of Ireland

This report:

1. Gives an account of the major food safety related public health issues on the island of Ireland and explains the related behaviours
2. Outlines food safety related behavioural research conducted on the island of Ireland to date and describes research carried out by **safefood** for the purposes of the report
3. Identifies research gaps and communications priorities.

The safety of our food supply is determined by the presence of microbiological hazards, chemical residues, environmental contaminants and infestation. This report describes the historical developments in food safety and the changing food environment predominantly over the last 100 years with particular emphasis on the last 20 years, during which time a succession of high profile food scares took place. These food scares were a major impetus in the establishment of food safety legislation and infrastructure throughout the EU and on the island of Ireland (IOI).

Current food safety related public health issues on the island of Ireland

Foodborne diseases comprise a broad group of illness caused by bacteria, viruses, parasites, chemical contaminants and biotoxins. There are five major bacteria that are responsible for the majority of cases of foodborne illness on the IOI: *Campylobacter*, *Salmonella*, *Clostridium perfringens*, verocytotoxigenic *Escherichia coli* (VTEC) and *Listeria*. These can be acute, chronic, or have long-term complications. Table 1 presents the number of cases for 2009 and 2010 for the five targeted microorganisms. These bacteria are important either because they cause a lot of cases of intestinal illness or because they can cause severe disease, or both. Viruses may also cause foodborne disease but they are primarily spread from person to person.

Table 1: Number of cases of foodborne disease for the Republic of Ireland and Northern Ireland for 2009 and 2010

	Number of cases			
	<i>ROI 2009</i>	<i>ROI 2010</i>	<i>NI 2009</i>	<i>NI 2010</i>
<i>Campylobacter</i>	1808 (42.6)	1662 (37.2)	986 (54.6)	1040 (57.6)
<i>Salmonella</i>	333 (7.9)	356 (8.0)	159 (8.9)	181 (9.3)
<i>Clostridium perfringens</i>	*11 (0.02)	-	18 (1.0)	-
VTEC	241 (5.7)	117 (3.7)	48 (2.5)	60 (2.8)
<i>Listeria</i>	10 (0.22)	10 (0.22)	4 (0.23)	2 (0.13)

*2009 EFSA report is the latest data available for this pathogen.

Parentheses show the crude incidence rates (CIR) per 100,000 population.

Consumer behaviour and food safety

Food behaviours and breaches of good hygiene practice can predispose consumers to a number of health consequences: from certain short-lived acute infections, to some more rare long-term diseases, all of which make up the spectrum of foodborne diseases. Normally a large number of food-poisoning bacteria must be consumed to cause illness. Therefore, illness can be prevented by (1) controlling the initial numbers of bacteria present, (2) preventing the small numbers of bacteria from growing, (3) destroying the bacteria by proper cooking and (4) avoiding re-contamination. Therefore the four main unsafe food behaviours are failure to cook, chill, clean and prevent cross-contamination. These behaviours can occur at a number of stages from the primary food producer (the “farm” stage), through the many processing stages, to the kitchen and ultimately consumer behaviour (the “fork stage”).

Information on actual consumer behaviour in relation to purchasing, transporting, storing, preparing and consuming food is essential to develop and underpin food safety promotional activities. From a consumer perspective the main food safety behaviours associated with foodborne illness are inadequate washing of hands, utensils, chopping boards and dishcloths (especially after contact with raw meat and chicken), inadequate washing of fruit and vegetables, improper storing, chilling and cooking of meat and chicken, cross-contamination of ready-to-eat foods and consumption of raw contaminated foods.

Influences on food safety behaviour on the IOI

Food safety practices are influenced by a wide range of factors including personal factors, culture and the wider environment, social situation and the nature of the risk involved. For food safety, the nature of the risk, the economic and policy environment (legislation/regulation), media environment, experience (past and present) and habit, knowledge, cooking skills and food safety training, convenience and time pressures, socio-economic status, age, gender, attitudes, perceptions and beliefs, may all play a significant role in influencing food handling practices. This area of research is still in its infancy on the IOI and limited data are available on how many of these factors influence food safety behaviours on the island. Much of the research is confined to data on knowledge, attitudes and perceptions of food safety issues. In addition, the sampling frames, timing and methods varied between studies making direct comparisons difficult. While there has been an attempt to draw conclusions and make recommendations based on the available information, caution should be applied to interpretations.

Food safety knowledge

While data on the wider influences on food safety behaviour are limited, several studies have examined knowledge of food safety among consumers on the IOI. The research shows that there are many gaps in food safety knowledge and practices that may result in foodborne diseases. Food can be mishandled at any number of places during food preparation, cooking and storage, and the evidence indicates that consumers have inadequate knowledge about the measures needed to prevent foodborne illness in the home.

These studies show that young people, and both older and younger men, may be particularly at risk of low levels of food safety knowledge. This is consistent with the international literature. The effect of educational level is unclear, but formal food safety training (e.g. home-economics courses or food hygiene courses) may be important.

Television remains an important source of information on food safety for adults, while the internet appears to be a more pertinent method for communicating with children and young people. Both home and school are important settings in which to communicate food safety messages. Scope remains to promote the use of food labels as important sources of food safety information and increase the proportion of the population utilising them. The use of social media to share food safety information among consumers is currently low. Overall, the results show that a variety of channels to communicate food safety messages could be utilised.

Attitudes to food safety

Several reports help to document food safety attitudes on the IOI. Much of the data refer to consumer concerns, both general and specific. In both adults and children, a minority spontaneously expressed concern about food safety issues, however a large proportion did so when prompted. This may indicate that food safety is not a top-of mind concern for consumers, however consumers express a high degree of concern about a wide variety of food safety issues when presented with a list of issues.

In summary, the issues of greatest concern to consumers on the IOI have varied greatly between surveys and years. Concerns have included issues such as food poisoning, BSE, antibiotics, hormones and steroids in meat, additives, preservatives, pesticides, chemicals, GM foods, date labels, country of origin and avian flu. Since 2004, food poisoning has been one of the key consumer concerns across all surveys on the IOI and may reflect increased consumer communication on this issue and a growing understanding of its importance. There is currently limited published data available on the IOI on public attitudes to emerging food technologies but new research is ongoing.

Current consumer concerns, attitudes, perceptions and barriers to food safety on the island of Ireland: safefood research

To inform this review of consumer behaviour, **safefood** commissioned research to identify key consumer concerns, attitudes, perceptions and barriers to food safety and healthy eating among adults on the IOI. A mixed methodology (qualitative and quantitative research) was undertaken. The research aimed to provide additional up-to-date information on the factors that drive food safety behaviour and the barriers to behaviour change.

The quantitative research, which was carried out by Millward Brown Lansdowne in late 2009, formed part of **safefood**'s bi-annual consumer tracking research entitled Safetrak. The questions used reflect previous questions included in **safefood**'s Safetrak and aim to address some of the influences identified in the introductory section. Nationally representative samples of adults aged 15-74 years were interviewed face-to-face, at home in the ROI (n=504) and NI (n =300). The methodology used quota sampling as a basis to ensure the sample was representative of the population on the IOI in terms of age, gender, region, marital status and social grade.

The qualitative research involved a series of six focus groups in a variety of population groups and locations on the IOI. The research aimed to explore factors including knowledge, attitudes, prior experience, social norms, self-efficacy, habit, emotion and contextual factors in relation to food safety. It also explored knowledge, attitudes and perceptions around food poisoning, motivations for change and

factors participants felt would help them change their current behaviours. The findings are summarised below:

Influences on food preparation

- Habit and convenience, taste and appearance and living arrangements influenced the types of meals prepared.
- The mechanics and ease of preparation, presentation and scheduling of meals had priority over food safety.
- There was clear gender and life stage variation in food safety practices:
 - males tended to be more haphazard in relation to their approach to food preparation practices than females
 - young mothers described very busy schedules, which did not allow prioritisation of food safety when preparing food.

Influences on food safety practice

- Participants that took part in the focus group research reported a wide variety of influences on food safety behaviour. These included:
 - physical influences such as food storage space and sensory perception
 - social influences such as time pressure, perceptions of other people, inherited habits and traditions
 - personal factors such as perceived responsibility, perceived risk, past experience
 - wider environmental influences such as the media.

Food safety concerns

- Seventy seven per cent of those surveyed expressed concern when asked to describe their attitude to food safety issues.
- Men were less likely to worry than women and those in the 15-25 year old age group were found to be least worried about food safety.
- Key issues of concern include preparation of pork and chicken, additives and colourings, undercooked food and food poisoning and date marks (freshness of food).

Risk perception

- Qualitative research showed that females had a stronger association than males between illness and poor food safety practices.

- Younger males felt averse to any type of consequence borne out of risky food safety behaviour and felt invulnerable to many food hazards.

Behaviour change

- Thirteen per cent of the adults surveyed felt that they needed to make changes to their current cooking, preparation and storage practices.
- Many of those who felt that they needed to make improvements claimed that “habit” was the main obstacle.
- Focus group participants felt that school-based education, media ubiquity, educational television programmes and publicity of foodborne disease outbreaks influenced behaviour.

Conclusions

Little data is available on the wider environmental influences on consumer food safety behaviour on the IOI, and in particular, qualitative investigations have seldom been carried out. There is evidence of gaps in consumer knowledge, which may result in foodborne illness. Young people, and older and younger men, may be particularly at risk due to low levels of food safety knowledge. The qualitative and quantitative research conducted for this CFR has shown that while consumers on the IOI in general have a good knowledge of food safety behaviour, and a high level of risk perception best practice food hygiene behaviours are not always implemented. The mismatch between knowledge, attitudes and perceptions of food safety and actual behaviour requires further study. In particular, further investigation into the (i) predictors of and (ii) barriers to safe food safety practices is merited. Gender and socio-economic differences in attitudes provide a basis for segmentation and targeting of key food safety messages. For example, while women and those with higher education had greater perceived importance of food safety, women, those with higher socio-economic status and greater experience had higher perceived food risk.

A wide variety of factors influence food safety behaviour including physical, social, personal and wider environmental factors. Food hygiene practices and their influencers vary according to gender and life stage. Young men, young people living in shared accommodation and busy mothers under time pressure appear to be key groups to target. As the roles of fathers' in the home continue to change, particularly in the face of high unemployment levels among men, this group may also come to the fore. While food safety behaviour and attitudes appear to be less healthy in men than their female counterparts, women were more concerned and perhaps therefore more open to food safety messages than men. Therefore the question remains as to whether men should be targeted directly, or whether women could be targeted as key influencers of men.

Several communication channels could be used to encourage consumers to change food safety related behaviour but television and the school setting were particularly mentioned by participants. Recommendations for food safety behaviour research and communications are listed below.

Recommendations

Research recommendations for food safety related behaviour change on the IOI

Knowledge gap	Public health implication(s)	Recommendation/solution
Continuous need to update knowledge base to ensure effective targeting of food safety legislation and regulation and the safety of the food supply.	Requirement for safe food supply.	<ol style="list-style-type: none"> Continued monitoring and surveillance of key sources of bacterial infection and chemical contamination. Surveillance and horizon scanning for emerging pathogens.
No longitudinal studies of public knowledge, attitudes and perceptions relating to food safety issues using consistent methodologies.	<ol style="list-style-type: none"> Difficulty tracking change. No clear understanding of consumer attitudes. 	<ol style="list-style-type: none"> Co-ordinated approach by agencies to fund a long-term survey. Supporting qualitative research would offer an additional method to gain in depth insights in to consumer behaviour.
Limited research on public attitudes to food scares on the IOI.	Potential to improve risk communication during crises.	Development of the evidence base of attitudinal research to better understand public responses to food scares.
Evidence of poor domestic food safety practice but limited data on how to improve this.	Risk of infection.	Further research into domestic food safety behaviour and relating attitudes, perceptions and beliefs.
Little evidence relating to wider environmental factors, such as economic factors, on food related behaviour.	Need to consider all factors that may influence behaviour change.	Consideration of broad set of influences in the design of research studies on food behaviour on IOI.
Evidence of a mismatch between food safety knowledge, attitudes and perceptions and food safety practices.	Knowledge alone will not change behaviour. An understanding of the knowledge-behaviour gap is essential for the	The mismatch between food safety knowledge, attitudes and perceptions and food safety practices merits further study.

	promotion of behaviour change.	
A number of key influences and barriers in food safety practice have been identified but it is as yet unknown how to effectively promote or overcome these.	Potential to promote behaviour change with enhanced consumer understanding.	Key influences and barriers to correct food safety practices and methods to promote or overcome these should be investigated further, including the influence of habit, social pressure and trust in sensory judgement.
Enhanced data on consumer attitudes to food technologies would be beneficial, particularly for food manufacturers working in product development.	Improve understanding of consumer acceptability of novel foods and production methods.	Conduct research on consumer acceptance of novel food technologies on the IOI.
Research indicated that men and women on IOI perceive food risk differently but little is known regarding effectively communication of gender specific messages.	Effective segmentation of consumer messages for men and women may help promote behaviour change.	Further research to gain insight into food risk perception and drivers of behaviour change in men and women.
Key concerns for consumers included the safety of chicken and pork and continued monitoring of attitudes to these foods is necessary to monitor consumer attitudes.	Potential to address consumer concerns.	Monitoring of consumer confidence around chicken and pork.

Recommendations for communication of food safety related behaviour change on the IOI

Priorities for communication/intervention	Public health implication(s)	Recommendation/solution
<p>The main food safety behaviours associated with foodborne illness are inadequate washing of hands, utensils, chopping boards and dishcloths (especially after contact with raw meat and chicken), inadequate washing of fruit and vegetables, improper storing, chilling and cooking of meat and chicken, cross-contamination of ready-to-eat foods and consumption of raw contaminated foods.</p>	<p>Risk of foodborne illness.</p>	<p>A continued focus on key domestic food safety messages for consumers.</p>
<p>Age, gender and life stage have considerable influence on food safety knowledge, attitudes and perception. Therefore, food safety messages should be segmented based on these important factors.</p>	<p>Certain group may currently be at risk of foodborne illness.</p>	<ol style="list-style-type: none"> 1. Young people, men and those from lower socio-economic groups may benefit from being the focus of communications campaigns to improve food safety practices. 2. Young people living in shared accommodation and busy mothers under time pressure appear are also important target groups. 3. As fathers' roles in the home continue to change, particularly in the face of high unemployment levels among men, this group may also merit particular attention. 4. The apparent importance of habit in food safety behaviour indicates that food safety training during childhood may be an important focus.

Foreign travel is a risk factor for foodborne illness.	Foodborne illness.	Develop seasonal food safety messages re foreign travel and food safety.
A wide variety of channels and settings can be used to communicate food safety messages.	Effective target can enhance uptake of food safety messages and potentially behaviour change.	<ol style="list-style-type: none"> 1. Television should remain an important medium for communicating with adults, particularly women, while the internet may be more important for young people and children. 2. Consumers identified the home and school as important settings for food safety learning. 3. The use of social media for communicating food safety messages is in its infancy and should be explored further.
Consumers continue to identify 'date marks' as important indicators of food safety.	Need to ensure this is correctly understood.	Continue to issue consumer messages to clarify the meaning of date marks.
Consumers suggested highlighting the benefits as well as the risks of food safety in communications.	May enhance motivation to change.	Develop messages that outline benefits of food safety as well as consequences.
Consumers requested practical advice on food safety.	Enhance consumer understanding and potentially consumer practice.	Provide practice messages around food safety in the domestic setting.