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A Review of Food Recalls in Canada: A Nationwide Survey

ABSTRACT

This study examined the Canadian food recall system from the consumer perspective through an online survey to determine whether recall fatigue is a problem among consumers. Recall fatigue occurs when consumers are inundated with such an excess of information on food recalls that it causes apathy toward food safety. Optimistic bias, the belief that others are at risk, but not one's self, also contributes to recall fatigue, which can lead to public health risks. Results indicate that although consumers generally have some knowledge of food recalls, they do not retain or subsequently internalize information about all food recalls. Results also indicate that Canadians have confidence in the current recall system. However, Canadians across all demographics place the responsibility for food safety on others, namely the federal government. Despite the fact that foodborne illnesses can originate in the home, the majority of Canadians believe they are more likely to occur as a result of actions taken before food reaches their home. The combination of apparent information overload, optimistic bias and inaccurate risk assessment regarding food recalls puts Canadians at risk of recall fatigue.

INTRODUCTION

Recall fatigue occurs because of excessive recall information demanding consumer awareness, which results in apathy toward further safety measures *(3, 13)*. Consumers may begin to ignore information about recalls as the result of repetition *(2)*. In any recall event, the issue applies only to a subset of the population – those who have purchased the contaminated product *(8)*. Therefore, recalls do not affect all consumers equally, creating an ambiguous sense of security among consumers. Nevertheless, there is evidence that consumers affected by recalls fail to act upon recall information if consequences in the form of foodborne illness are not perceived as greater than the warranted action *(11)*. In addition, consumers can lack important distinguishing skills to determine if recalls apply to their purchases. In many cases, consumers become overwhelmed by excessive information, are confused or misunderstand information that is highly technical, or believe that the information they receive

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does not apply to their purchases. Finally, consumers hold a level of confidence in the current food supply chain that is not built upon evidence, but rather on trust of a system that may not have caused the consumer to be affected by recalls in the past. This exploratory study used a survey that sought to better understand the Canadian food recall system from the consumer perspective. Questions were asked about four broad themes: (1) General knowledge and awareness of food recalls in Canada, (2) Consumer reaction to food recalls, (3) Responsibility for food safety and (4) Demographic and Socio-economic information.

Epidemiological surveillance systems enable public health officials to implement strategies to address foodborne illness in the current supply chain. Once an outbreak has been detected, genetic testing for strains of a pathogen allows for better tracking of the outbreak, ideally leading to the source *(13)*. The results can lead to food recalls that allow for the mitigation of foodborne disease or illness. This research suggests that an increase in the frequency of recalls results in apathy, in which the consumer takes no action in compliance with the recall, i.e., shows a condition of fatigue. Therefore, the authors submit that recall fatigue results from the cumulation of three key factors: information overload, optimistic bias, and risk assessment.

As strategies to detect foodborne illness become increasingly sophisticated, the Canadian Food Inspection Agency (CFIA) has correspondingly issued more food recalls. *Figure 1* shows the increase in recalls issued by the CFIA between 1998 and 2017. It should be noted that the spike in recalls in 2012 was caused by the *E. coli* crisis at XL foods, where over 1.8 million kilograms of beef were recalled in 90 individual recalls over a 26-day period in September and October of that year *(7)*. The general trend in the number of food recalls issued by the CFIA is that they are increasing *(Fig. 1)*.

An increase in food recalls could result in information overload for consumers. Information overload occurs when the time required for adequate information processing exceeds the amount of time during which an individual must process, or is able or willing to process, a given set of information *(21)*. Therefore, consumers conceivably receive excessive information regarding food recalls, which increases the likelihood that consumer attention is low, thereby increasing the risk that they will miss critical information about purchases. To confound consumers further, media attention to recalls increases if recall events are national in scope or result in severe consumer illness or death *(18)*. For example, in 2012 during the XL Foods beef recall, 974 articles were published in Canadian news sources in September and October of that year (based on searches within the Eureka database). However, increased media attention does not necessarily result in informed consumer behavior. Indeed, the media are often criticized for inaccurate, sensational or erroneous science reporting *(18)*. For information to be properly translated into actionable knowledge, it must address a specific need and be able to be processed by the target audience *(22)*. Importantly, it must be recognized that consumers who receive excessive information cannot cognitively process that information *(22)*.

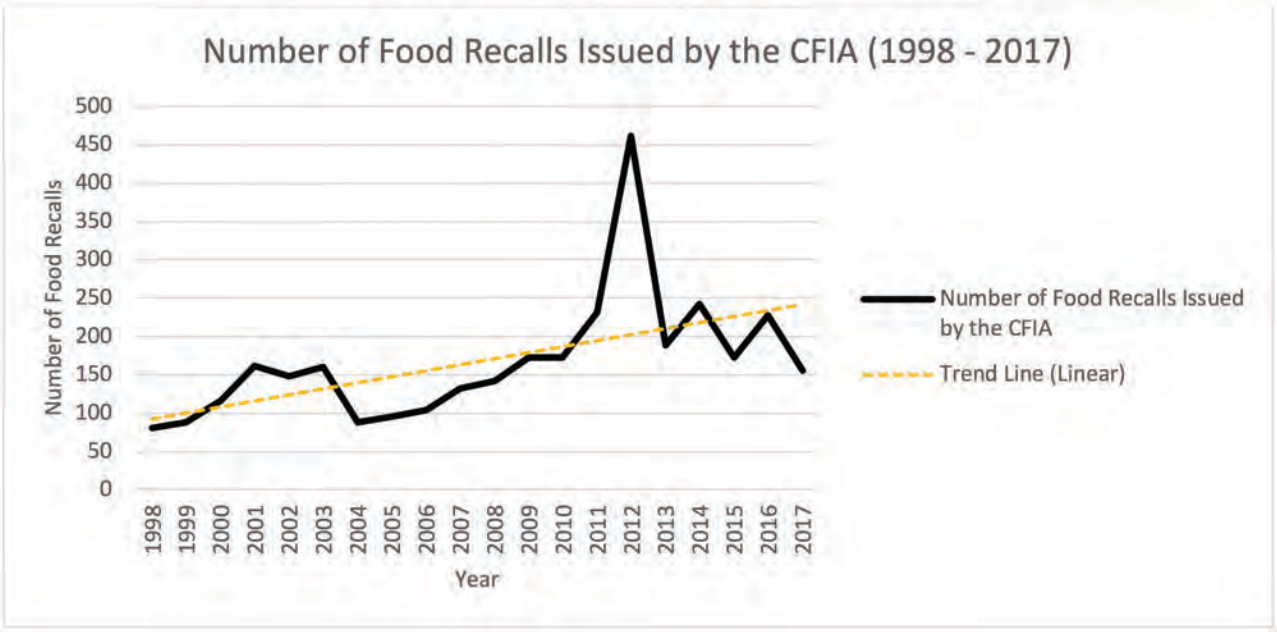

FIGURE 1. Recalls issued by the CFIA 1998 – 2017 (CFIA, 2017).

Optimistic bias is the tendency for people to believe that they are less likely to experience negative events than others and more likely to experience positive ones *(14, 23)*. Optimistic bias has been found in relation to matters such as the risks associated with smoking *(1, 24)*, traffic accidents *(9)* and cancer *(12)*. In relation to food recalls, consumers are more likely to believe that they are not at risk of serious foodborne illness, although others are *(25)*. In addition, foodborne illness may be mild enough to be misdiagnosed and attributed to a different underlying cause *(10)*. Further, consumers who have not been affected by recalls may not fully appreciate the seriousness of foodborne illness *(25)*. These contributing factors enable consumers to consider such messages as being aimed at others *(17)*. Understanding optimistic bias in relation to foodborne illness is important in order to frame communication efforts around recalls and reduce the likelihood that consumers will ignore recall information.

Consumer behavior is dictated by risk assessment of the disadvantages of a particular action against its perceived benefits. In the case of food recalls, this assessment is largely based on consumer perceptions of the food safety system and the overall food industry *(6)*. In general, consumers who have high confidence in the current system are less likely to pay attention to food recall information and less likely to take action in the event of a food recall, as they are less likely to believe that any negative consequences will occur as a result *(13)*. This suggests that the method and frequency of communication of risks associated with food recalls with the public is a key aspect in combating recall fatigue. Previous research indicates that consumers typically do not retain messaging until the risk of foodborne illness reaches crisis levels *(15)*. This implies that combating recall fatigue involves risk communication strategies associated with foodborne illness in non-crisis periods.

Over one hundred food recalls are issued every year in Canada *(5)*. Of these, only a subset receives substantial media attention. Consumers notified of food recalls must decide on appropriate safety precautions, such as locating the affected product, changing preparation and food-handling standards within the home or seeking medical attention for misdiagnosed foodborne illness. Media messaging influences these decisions, as well as consumer attitudes towards food safety, confidence in the current food supply chain and, possibly, associated optimistic bias *(Fig. 2)*.

MATERIALS AND METHODS

The focus of this study was a quantitative analysis of primary data obtained from an internet-based survey of Canadian adults. Ethical approval to conduct the survey was granted by Dalhousie University's Research Ethics Board in accordance with the policy on the ethical conduct of research involving humans. To be included, participants had to be age 18 or over and to have lived in Canada for at least two years. The purpose of this exploratory study was to determine the presence of recall fatigue. Therefore, consumers were not probed to respond to questions about recall information in general and/or a recall of a specific food type they have purchased. As a result, the research does not claim to conclude whether the participants actively

FIGURE 2. Conceptual Framework

TABLE 1. Demographic profile of respondents

Demographic Factor	Percentage of Respondents
Gender	
Female	39.2%
Male	60.5%
Other	0.3%
Age	
Generation Z (Under 21)	3.8%
Millennials (21 – 35)	27.4%
Generation X (36 – 49)	23.9%
Baby Boomers (Over 49)	44.4%
Education	
Some High School	5.0%
High School Diploma	25.9%
Registered Apprenticeship or Other Trade Certificate	7.8%
College, CEGEP or Other Non-University Certificate or Diploma	29.0%
University Degree	23.3%
Graduate Degree or Diploma	8.6%
Other	0.5%
Income	
Less than $40,000	32.1%
Between $40,001 and $80,000	35.7%
Between $80,001 and $150,000	20.0%
More than $150,000	5.0%
Prefer not to answer	7.3%
Marital Status	
Single	32.8%
Married or Common Law	53.9%
Divorced or Separated	12.7%
Number of Children in Household	
One	18.6%
Two	0.0%
Three or More	7.4%
None	72.9%
Geographic Region	
British Columbia	13.4%
Prairies	17.3%
Ontario	37.8%
Quebec	23.4%
Atlantic Canada	7.4%

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TABLE 1. Demographic profile of respondents (cont.)

Demographic Factor	Percentage of Respondents
Urban/Rural	
Urban Core	37.9%
Suburban	37.3%
Small Town/Rural	23.2%

ignore recall information, rather only whether fatigue of such information is present. The survey asked questions pertaining to four broad themes: (1) General knowledge and awareness of food recalls in Canada, (2) Consumer reaction to food recalls, (3) Responsibility for food safety, and (4) Demographic and Socio-economic information. Prior to the launch of the survey, a pre-test was conducted to ensure that all questions were clear and understandable. The survey, which was available in both English and French to aid in capturing a broad and representative sample of Canadians, is shown in Appendix A.

The survey was administered online through Qualtrics over a two-day period in March 2018. Qualtrics allowed for the survey to be distributed widely across the county, reaching a broad spectrum of Canadians across several different regions and socio-economic groups. Overall, 1,049 people completed the survey, a sample size considered adequate for an exploratory study of this nature. If this sample had been completely random, it would have a margin of error of 3.1%, assuming 95% confidence. However, our responses were not collected entirely randomly, employing instead a convenience sample, in which respondents are selected from a database of Canadians who either have opted in or been invited to participate in market research. Because of this limitation, our results likely have a higher margin of error than if respondents had been randomly selected from the entire Canadian population.

RESULTS

The demographic and geographic profile of respondents can be found in *Table 1*. The survey produced interesting results about general knowledge and awareness of food recalls, concern about foodborne illness and responsibility for food safety. Significant results of cross tabulation comparisons of responses to demographic information are noted below the tables.

General knowledge and awareness of food recalls

Respondents who were most aware of food recalls were those who earned $80,000 or above, were living in the Atlantic Provinces, have a university degree and/or are married or in a common-law relationship; respondents least aware of food recalls were those who were of generation Z, earned less than $40,000, were single, were living in Quebec and/or have a high school diploma *(Table 2)*.

To test respondents' general knowledge of food recalls, four examples, three real and one false, were presented in a random rotation. Respondents were asked if they had heard of recalls involving flour (2017), frozen fruits and vegetables (2016), hummus (2016) or potatoes (false). Only 3.6% of respondents answered this series of questions correctly. Although this does not reveal *why* respondents are not retaining correct recall information or specifically speak to recall fatigue, it does point to the need for further study in order to identify the underlying causes and possible impacts of erroneous identification of relevant recalls.

Concern about foodborne illness

Respondents were asked how concerned they were about a variety of topics related to foodborne illnesses. In order of most to least concern, respondents were concerned about foods that are not fresh or stored properly, bacteria and viruses in general, *Listeria* and *Bovine Spongiform Encephalopathy* (mad cow disease) *(Table 3)*.

Respondents who were most concerned about food recalls were those with children, from Ontario and/or who were married or in common law relationships. Respondents who were most skeptical of the food recall system, agreeing that the risks associated with food recalls are largely exaggerated, were those who earn more than $150,000, generation Z and millennials and/or those with two or more children. Confidence in the current food recall regulatory was mixed, but in general those who were most confident in the system were those who hold advanced university degrees, earn more than $150,000, are male, live in British Columbia and/or are baby boomers. In contrast, those with the least confidence in the food regulatory system were those who have a diploma, are divorced or separated, are from Ontario and/or do not have children.

Responsibility for food safety

Overall, Canadians across all demographic groups do not see themselves as responsible for food safety *(Table 4)*, instead seeing the government and government agencies (particularly those at the federal level) as responsible for food safety. The majority of Canadians believe that food

TABLE 2. Survey results falling under the theme of general knowledge and awareness of food recalls

Survey Response	Percentage of Respondents
Thinking about the last 2 years, have you heard anything about food being recalled in Canada?	
Yes	79.5%
No	20.0%
Prefer Not to Answer	0.5%
Thinking about specific food recalls (3 real and 1 false) over the last 2 years, how many have you heard of?	
Said Yes to All	33.2%
Said No to All	3.6%
All Correct Answers	3.7%
Said Yes to at least One Real Recall	65.4%
Said Yes to at least Two Real Recalls	31.6%
Where do you get your information about food recalls? (Respondents could choose up to 3)	
TV, Radio, Newspapers	71.6%
Social Media	41.8%
Word of Mouth	27.2%
I have not heard anything about food recalls	9.3%
Government Publications	8.3%
Other	4.1%
Non-Government Publications	3.0%
How many recalls were issued by the Canadian Food Inspection Agency in 2017?	
Overestimate	3.9%
Underestimate	83.0%
Correct	4.4%
Prefer not to answer	4.4%

TABLE 3. Survey results falling under the theme of concern about foodborne illness

Survey Response	Percentage of Respondents
Over the last 5 years, food recalls have become more of a concern to me.	
Strongly agree	22.7%
Somewhat agree	34.3%
Neither agree nor disagree	25.3%
Somewhat disagree	11.1%
Strongly disagree	6.0%
Prefer not to answer	0.6%

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TABLE 3. Survey results falling under the theme of concern about foodborne illness (cont.)

Survey Response	Percentage of Respondents
The risks associated with food recalls are largely exaggerated.	
Strongly agree	7.1%
Somewhat agree	15.8%
Neither agree nor disagree	24.3%
Somewhat disagree	28.7%
Strongly disagree	23.1%
Prefer not to answer	1.0%
When I hear about food recalls, I feel confident because it means that the regulatory system is working.	
Strongly agree	26.0%
Somewhat agree	45.3%
Neither agree nor disagree	20.1%
Somewhat disagree	5.4%
Strongly disagree	2.0%
Prefer not to answer	1.2%
When I hear about food recalls, I am worried because it means that the regulatory system is failing because contaminants are getting through.	
Strongly agree	14.6%
Somewhat agree	32.8%
Neither agree nor disagree	24.8%
Somewhat disagree	20.1%
Strongly disagree	6.7%
Prefer not to answer	1.0%
I am capable of protecting myself and my family from food safety issues.	
Strongly agree	16.2%
Somewhat agree	38.0%
Neither agree nor disagree	25.6%
Somewhat disagree	14.2%
Strongly disagree	5.2%
Prefer not to answer	0.9%
Food safety regulators are doing all that they can to protect Canadians from food safety issues.	
Strongly agree	23.4%
Somewhat agree	44.9%
Neither agree nor disagree	19.0%
Somewhat disagree	9.5%
Strongly disagree	2.1%
Prefer not to answer	1.1%

TABLE 4. Survey results falling under the theme of responsibility for food safety

Survey Response	Percentage of Respondents
Who is most responsible for food safety in Canada? (Respondents could choose up to 3 choices.)	
Canadian Food Inspection Agency	89.1%
Food Producers	50.4%
Health Canada	45.8%
Food Retailers	37.8%
Agriculture and Agri-Food Canada	34.8%
Provincial/Territorial Governments	26.3%
Farmers	20.3%
Consumers	17.9%
Prefer not to answer	1.3%
Other	0.4%
Which of the following is most closely aligned with how you feel about food contamination?	
Food contamination primarily occurs before food reaches my home	83.4%
Food contamination primarily occurs as a result of improper handling and storage in my home	13.3%
Prefer not to answer	3.3%

contamination occurs primarily before it reaches their homes, rather than as a result of improper handling and storage in their homes.

DISCUSSION

The results indicate the presence of recall fatigue among Canadian consumers with regard to food recalls. Although Canadians have a general awareness of food recalls and appear to have access to reliable information sources, they appear to retain information on only a portion of all such recalls. Of concern is the detachment between Canadian consumers and the responsibility for food safety *(8)*, which they largely see as a responsibility of the government rather than themselves. This disconnect is worrisome, because foodborne illnesses can originate at any point in the food supply chain, from factory conditions to improper storage or handling of food in the home *(19)*.

The majority (83.0%) of respondents underestimated the occurrence of food recalls during the previous year. Most (71.6%) reported receiving information about food recalls from traditional media sources (television, radio, newspapers). This was consistent across all demographic groups. Consumers indicated that some recall messages were relayed through social media sources (Twitter, Facebook). Although social media sources spread information quickly, they are more likely to frame food recall issues politically, amplifying messaging that detracts from the seriousness of the recall or lays blame for contamination according to stakeholder ideological values *(4)*. This may become a greater issue as younger demographic groups move away from traditional media sources. Further, consumers may be more likely to act on emotional responses to food recalls than on scientific or evidentiary assessments *(16)*. Thus, the information 'gatekeeping' role of traditional news media becomes increasingly more important. One subset of the population remains particularly unlikely to be informed about food recalls through traditional and social media sources and therefore less able to mitigate the risk of foodborne illness for themselves and their families; specifically, Canadians with only a high school diploma and/or earning less than $40,000 are the most vulnerable in the current food safety system. Further research is warranted on how best to communicate important recall information to this subset.

Canadian consumers appear to have confidence in the food recall system. While this in itself is positive, evidence from the survey suggests that confidence may generate complacency regarding food safety and foodborne illness. In general, respondents believe that responsibility for food safety lies with someone else, primarily the federal government

and its agencies. This, coupled with the opinion that food contamination is generally seen as occurring before food reaches the home, highlight a potential aspect of recall fatigue — optimistic bias. These trends were true across all respondents rather than specific to any one particular demographic. These results are in line with those of other studies that have investigated optimistic bias in food safety *(20)*. Consumers who do not believe they are at risk of contracting foodborne illnesses as a result of improper storage or handling practices in the home are more likely to neglect taking the necessary precautions to mitigate these risks. There is thus a need to better communicate the risks associated with improper storage and handling of food in the home.

To our knowledge, this is the first cross-national survey to examine potential symptoms of recall fatigue in Canadian food consumers. Although this survey reached a wide variety of Canadians, across various demographic and socio-economic categories, the results are not fully representative of the Canadian population. Our data is also limited to Canadians, and inferences therefore cannot be made regarding consumers in other countries. However, despite these limitations, this study yielded interesting results that can form the basis of future research on recall fatigue and on perceptions of responsibility for food safety. Further, research on communication methods and their impacts on different demographic subgroups could potentially mitigate the risk of foodborne illness in those groups most likely to demonstrate optimistic bias or to lack access to traditional information sources.

CONCLUSION

This exploratory study examined at the Canadian food recall system from the consumer perspective. Although Canadians generally have some knowledge of food recalls, they are not retaining information about all food recalls. They are confident in the current system, but this confidence has come with some potential consequences; they largely see themselves as removed from the food safety system, placing the responsibility for protecting people from food contamination on others, namely the federal government. Despite the fact that foodborne illness can originate in the home, the majority of Canadians believe that such illinsses are more likely to occur because of something that occurs before food reaches their homes. The combination of apparent information overload, optimistic bias and inaccurate risk assessment regarding food recalls puts Canadians at risk of recall fatigue. However, opportunities exist to combat these symptoms, as Canadians place a high degree of trust in traditional news media sources, the place where most consumers get their information about food recalls. Future research is needed to better understand how Canadians react to recalls and to identify the messaging to which consumers respond.

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