

# Older adults cognition of recommended domestic practices to reduce risks associated with *Listeria monocytogenes*

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## Introduction

Reported incidence of listeriosis has more than doubled in Europe<sup>1</sup>, with two-thirds of reported cases in 2007 associated with older adults aged  $\geq 60$  years<sup>2</sup> and UK incidence among older adults are reported to have tripled<sup>3</sup>.

Cases of listeriosis are reported to be largely sporadic<sup>4</sup>, which may be associated with unsafe food handling and storage practices in consumers' domestic kitchens<sup>5, 6</sup>.

Given *L. monocytogenes* is a psychrotrophic mesophile and a facultative anaerobe<sup>7</sup>, the pathogen has the ability to survive and grow in vacuum packed food products during refrigeration. The majority of listeriosis incidence are predominantly associated with ready-to-eat (RTE) foods<sup>8, 9</sup>.

Consequently, recommended domestic practices to reduce risks associated with *Listeria monocytogenes* include<sup>10, 11</sup>:

- Adhere to 'use-by' dates on RTE foods
- Ensure safe refrigeration temperatures
- Consume RTE foods within two days of opening

Older adults are reported to frequently consume RTE foods associated with listeriosis<sup>12, 13</sup>; however, data relating to older adults domestic food safety practices are lacking and is required to ascertain factors that may contribute to the risk of listeriosis in the domestic kitchens of older adults<sup>8</sup>.

## Aim

The aim of this study is to ascertain older adults cognitive influences that may give in-sight to the implementation of recommended practices to reduce the risks associated with listeriosis in the domestic kitchen.

## Methods

**Questionnaire development** - A systematic review of literature was conducted inform design and development of a quantitative self-complete questionnaire to ascertain older adults' knowledge and self reported practices of domestic food handling, storage and consumption habits.

**Data collection and sample** - Participants were recruited according to predetermined criteria. The self-complete questionnaire was self-administered to 100 adults  $\geq 60$  years from South Wales, UK. Completion of questionnaire in the Food Industry Centre took ~20 minutes.

**Data analysis** - IBM SPSS statistics 17.0, Microsoft Office Excel 2007 and Access 2007 were used to conduct quantitative and statistical analysis of the data.

## Results

As illustrated below in Table 1, it has been determined that older adults may have some knowledge or, have positive attitudes towards some of the recommended food safety practices recommended to reduce the risks associated with listeriosis; however, findings indicate that:

- Although the majority were knowledgeable of the purpose of 'use-by' dates, attitudes were not positive and consequently the majority reported the malpractice of consuming RTE foods beyond the 'use-by' date.
- Knowledge of the recommended safe refrigeration temperature was particularly lacking, although around half had a positive attitude towards the importance of checking refrigeration temperatures, the majority failed to report refrigeration temperatures would be checked.
- The majority lacked knowledge regarding the recommended storage length for opened RTE foods, although some had a positive attitude towards the importance of this practice; concerningly, less than a third reported that opened RTE foods would be consumed within two days.

Table 1. Cognitive and behavioural comparison of older adults' knowledge, attitudes and self-reported practices of the recommended practices to reduce the risks associated with listeriosis (n = 100)

	Knowledge	Attitudes	Self-reported practices
<b>Adhere to 'use-by' dates on RTE foods</b> 	72% of older adults knew that the 'use-by' date was the best indicator for food safety.	66% failed to express positive attitude towards consuming food beyond the 'use-by' date.	57% reported that they consume food that have expired 'use-by' dates.
<b>Ensure safe refrigeration temperatures</b> 	87% did not know that 5°C is the recommended maximum operating temperature of a domestic refrigerator to ensure the safe of foods.	52% felt that checking the refrigerator operating temperature is 'somewhat' – 'extremely important'.	65% reported to 'never' check that their refrigerator is operating between 0 - 5°C.
<b>Consume RTE food within two days of opening</b> 	84% believing that RTE foods could be stored beyond the recommended two days after opening.	68% felt it 'somewhat – extremely important' to eat RTE food within two days of opening.	Only 28% reported that RTE food would be consumed within two days of opening.

Additionally, findings have determined that 74% of older adults failed to express positive attitudes towards food safety. The majority perceived themselves to have no/low risk of food poisoning (88%), total/nearly total control (82%) and complete/nearly complete responsibility for food safety (86%). Significant correlations were determined between older adults' perceptions of risk, control and responsibility. With low risk perception associated with high control perception and high responsibility perception:

- Perception of personal risk of food poisoning and personal control of food safety,  $r = -0.234$ ,  $n = 99$ ,  $p < 0.05$ .
- Perception of personal risk of food poisoning and personal responsibility for food safety,  $r = -0.257$ ,  $n = 100$ ,  $p < 0.05$ .
- Perception of personal control of food safety and personal responsibility for food safety,  $r = -0.256$ ,  $n = 99$ ,  $p < 0.05$ .

## Significance of the study

- Older adult consumers lack adequate knowledge and positive attitudes towards the three key food storage practices that are required to reduce the risks associated with listeriosis.
- The implementation of such potentially unsafe practices were self-reported by older adults when storing RTE foods in the domestic kitchen.
- Consequently, older adults may regularly consume food products that have been subjected to prolonged and inadequate storage, thus increasing the potential risk of listeriosis.

**Cumulative knowledge, attitudinal and perception findings indicate that older adults' food safety cognition may impact on behavioural intentions and consequent behaviours.**

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