

Consumer Understanding and Self-Reported Practices Related to Date-Labeling and Household Food Waste.

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Introduction

In the United Kingdom (UK), date labelling food products is a legal obligation to indicate the date until which the food retains its specific properties when correctly stored (FIC, 2011). Date labels are often referred to as durability indications, and are commonly displayed as 'use-by' or 'best before' on food products purchased by consumers. It can be suggested that a lack of consumer understanding concerning date-labelling and its association with food-safety are important contributors to domestic food-waste behaviours.

Household waste levels in the UK have increased in recent years to 9.5million-tonnes (WRAP, 2020); 70% of this waste is reportedly produced from households, the majority of which has been deemed 'avoidable food waste' (WRAP, 2021). The main causes of household food waste are reported to be consumers over-buying and not using foods and within the date label, preparing too much food and throwing leftovers away as well as consumer misunderstanding and misuse of date labels (Patra, *et al.* 2022). Such behaviours result in avoidable food waste, meaning the food could have been consumed if better understanding of date labels and good food handling behaviours were implemented, such as safe food storage and following on-pack instructions (Aydin and Aydin, 2022).

Research from the United States (Kavanaugh and Quinlan, 2020) has investigated food date labels and waste, and concluded that consumer misunderstandings of date labels can inadvertently increase household food waste and consumer education in this area is required. To inform targeted educational initiatives in the UK there is a need to fully understand current food waste behaviours and associated cognitive factors related to date labelling.

Aims

The study aimed to explore consumer understanding and self-reported practices associated with food date-labelling of food products in the context of household food-waste practices in Wales, UK.

Methods

Survey development: A review of consumer date-labelling and food-waste literature (2004-2022) informed development of a quantitative tool to assess attitude, knowledge and self-reported data associated with food durability indicators and attitudes, perceptions and self-reported household food waste practices. Survey piloting used standard approaches (Coolican, 2018).

Recruitment and data capture: A dual approach to recruitment and survey distribution occurred to collate data from consumer groups.

• Using call-to-action posters, consumers working in a meat-processing site were invited to complete a paper-based survey; anonymous responses were collected in a locked ballot box.

• Consumers from the general population were invited to complete an anonymous online survey using social media platforms, call-to-action posters and a snowball sampling approach (Leighton *et al.* 2021).

Data analysis: A Cronbach's alpha coefficient of 0.7 was determined indicating reliability of Likert attitudinal scale used in the survey. Descriptive and inferential data analyses of responses (n=94) occurred using SPSS Statistics for Windows (Version 29) and Microsoft Excel (2016).

Ethical approval for the review was obtained from the Cardiff Metropolitan School of Sport & Health Sciences Ethics Committee (Reference: PGR-4359).

Significance

- Findings highlighted that substantial proportions of UK consumers from the general population and employed in the meat processing food industry sector lack correct understanding of 'use-by' and 'best before' date labelling which may result in unsafe food safety practices, increased risk of foodborne illness and increased food waste.
- The majority of consumers reported awareness of the need and personal responsibility to reduce food waste, however, few reported implement food shopping/storage behaviours to achieve this.
- Targeted advice about date label use and management in the home may help to reduce household food waste.

Results and Discussion

Overall, 140 questionnaire responses were obtained from consumers from the general population, of which 71% (n=99) were fully completed and usable responses analysed within this study.

- Majority of respondents were female (74%)
- Representation from all age groups from 18-65+years
- Majority (64%) respondents were employed full/part time.

A total of 30 complete responses were obtained from the consumers employed in the meat processing site (response rate 67%); 95% were employed full time.

- Majority of respondents were male (90%).
- Representation of consumers aged 18-64years.
- Overall, 53% respondents were educated to secondary school level.

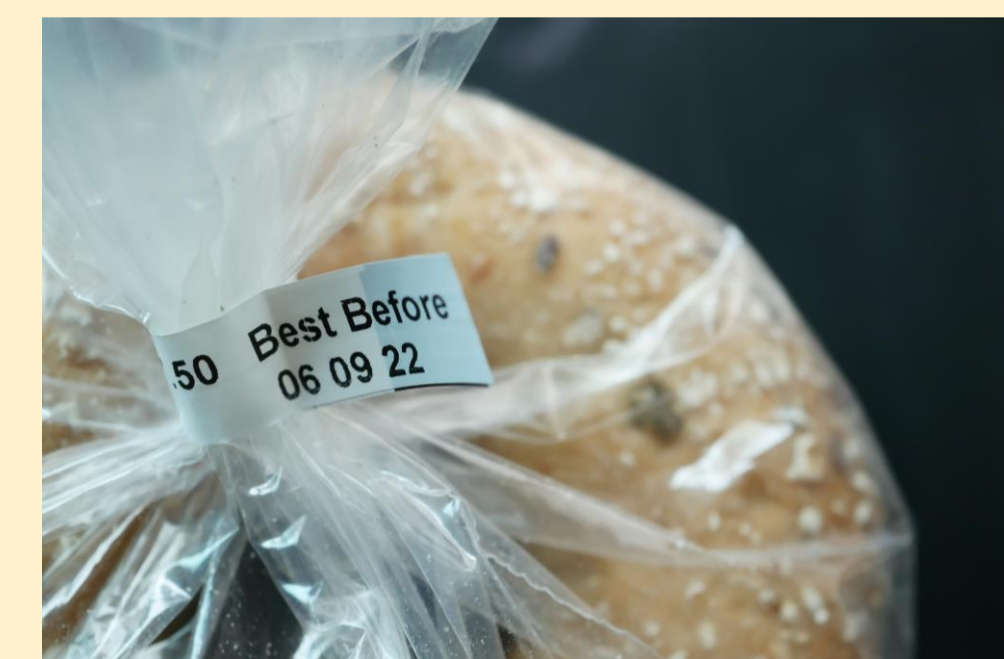
Consumer Awareness of Food Date Labels

- Findings indicated considerable gaps in consumer understanding of date-labelling (see Table 1); cumulatively, 65% consumers correctly associated 'use-by-dates' with food-safety, and 70% consumers equated food quality with 'best-before' date-marking. Further analysis indicated that over half (59%) of the consumers who participated in the study were able to correctly identify both date labels.
- Overall, no significant difference ($p>0.05$) in awareness of food durability indicator meanings was identified between consumers from the general population and consumers employed in the meat processing site.



Table 1. UK Consumer Awareness of Food Date Labels.

		Food Quality	Food Safety
General Consumers (n=99)	'Best Before' date	65%	35%
	'Use-by' date	16%	84%
Industry Consumers (n=30)	'Best Before' date	70%	30%
	'Use-by' date	23%	77%



- Many (61-67%) consumers did not agree that 'use-by-dates' were the best way to determine if food is safe to eat.
- Between 35-50% reported consumption of food past its 'use-by-date'. More consumers from the general population (30%), than consumers employed in the food sector (34%), believed they are more likely to adhere to use-by-dates than 'other people' indicating perceptions of optimistic bias (Redmond and Griffith, 2004).
- No statistically significant associations or differences ($p>0.05$) were identified between knowledge of date labelling and gender, presence of children in the household or employment. However, a significant association ($p<0.01$) was determined between understanding date labels and age, indicating increased awareness of date labels by younger consumers.

Findings indicated that consumers who were aware of the meaning of one date label were significantly associated ($p<0.01$) with knowledge of both date labels.

A significant difference ($p<0.05$) in perceived judgement to determine whether a food is safe to eat by the smell was determined between 'general consumers' (67%) and 'consumers employed in a meat processing site' (80%).

Household Food Waste and Food Date Labels

- Overall, positive attitudes from both consumer groups were determined towards the need to reduce food waste with some food planning/storage behaviours reported, as well as acknowledgement for personal responsibility for minimising food waste.
- Attitudinal responses to food waste were cumulatively more positive than date labelling.
- A comparison of perspectives associated with date labelling and household food waste can be seen in Table 2 illustrating discrepancies between cognitions.
- Further analyses showed that 82% of all consumers who participated in the study (n=129) demonstrated correct knowledge of 'use-by' dates, 78% agreed that food past its 'use-by' date could be unsafe to eat, however, 71% of consumers reported eating food past the 'use-by' date if the packet had been unopened.



Table 2. Comparison of knowledge, attitudes and self-reported practices concerning food date labels and household food waste.

	Attitudes	Knowledge	Self-reported practice
Food Durability Indicators	67-70% consumers thought that throwing out food after the use-by date is wasteful. 53% considered it was important to avoid eating foods after the use-by date.	77-78% were aware that food past its use-by date could be unsafe to eat. 67-80% considered that they could judge if food was safe to eat by smell; 55-57% thought they could do so by taste. 50-52% were aware that use-by dates are invalid after a food packet has been opened.	23-53% reported to always throw raw meat out if past the use-by date. 27-28% reported to always eat food past the use-by date if it does not smell 'spoiled'. 40-46% indicated they check durability indicators when shopping.
Household Waste	67-73% thought they implement effective food management practices at home. 80-88% considered that meal planning would decrease their food waste. 93-100% considered that everyone (including themselves) have a responsibility to minimise food waste.	90-94% consumers were aware that food waste is an important national issue. 30-38% knew they should follow food packaging instructions indicating how long food should be stored for once opened.	10-17% consumers reported that they 'always' plan meals. 40-46% indicated that they 'always' check what food is in the house before doing a food shop.

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