

Use of the 'Safe Recipe Style Guide' to review food safety information provision in online recipe-videos and online supermarket recipes.

Naomi J. Melville¹, Ruth M. Fairchild¹ and Ellen W. Evans^{1*}

¹ZERO2FIVE Food Industry Centre Food and Drink Research Unit, Cardiff Metropolitan University, Cardiff, United Kingdom.

*Corresponding author: nmelville@cardiffmet.ac.uk

Introduction

The risk of foodborne illness can be reduced through the implementation of adequate food safety practices¹. Previous research has indicated consumers do not always follow recommended food safety practices in the domestic setting².

Partnership for Food Safety Education (PFSE) produced a 'Safe Recipe Style Guide' with people from the food safety industry and recipe writers to improve the incorporation of food safety communication in recipes³. Practices highlighted relate to temperature, handwashing, cross-contamination and produce⁴.

Previous literature has discussed the lack of communication of positive food safety practices in television programmes and published cookery books^{5,6}. The way consumers obtain recipes has changed dramatically due to significant improvements in mobile technology⁷. For example, video-on-demand systems and free-to-access digital recipe platforms⁸, such as those available from supermarkets are popular and trusted recipe sources for UK consumers^{8,9}. However, little is known regarding the inclusion of food safety information in such sources.

Given the increased popularity and engagement with online platforms, and the opportunity to promote positive food safety practices, there is a need to evaluate the communication of these practices.

Purpose

The aim of the research was to assess the provision of food safety information communicated in YouTube video recipes and online UK-based supermarket recipes using a tool developed from the 'Safe Recipe Style Guide'³.



Methods

- QualtricsSM was used to develop an electronic observational checklist evaluating best, inadequate, not present or malpractice of food safety practices. Recommended food safety practices (n=7) linked to the PFSE 'Safe Recipe Style Guide' included 'Temperature', 'Hand Washing', 'Cross-contamination' and 'Produce'³.
- The inclusion criteria were English language recipes for 'chicken salad'. The inclusion of raw and ready-to-eat (RTE) elements was selected due to the potential risk of cross-contamination between raw and RTE elements.
- Content analysis was undertaken of YouTube chicken salad video recipes (n=38) and chicken salad recipes (n=40) obtained from the websites of UK-based supermarket retailers (n=10) to assess the provision of food safety information.
- Ethics approval was obtained from the Healthcare and Food Ethics Committee at Cardiff Metropolitan University (Project Ref: UG-2886).

References

- Byrd-Bredbenner C, Berning J, Martin-Biggers J, Quick V. Food safety in home kitchens: a synthesis of the literature. Int J Environ Res Public Health. 2013;10(9):4060-85.
- Redmond EC, Griffith CJ. Consumer Food Handling in the Home: A Review of Food Safety Studies. J Food Prot. 2003;66(1):130-61.
- Partnership for Food Safety Education. Why The Safe Recipe Style Guide And Why The Partnership For Food Safety Education? 2020 [Available from: <https://www.saferecipeguide.org/why/>].
- Partnership for Food Safety Education. How to use the: Safe Recipe Style Guide 2020 [Available from: <https://www.saferecipeguide.org/how-to-use/>].
- Borda D, R. Thomas M, Langsrud S, Rychli K, Jordan K, van der Roest J, et al. Food safety practices in European TV cooking shows. British Food Journal. 2014;116(10):1652-66.
- Levine K, Chaifetz A, Chapman B. Evaluating food safety risk messages in popular cookbooks. British Food Journal. 2017;119(5):1116-29.
- Cooper J. Cooking trends among millennials: Welcome to the digital kitchen 2015 [Available from: <https://www.thinkwithgoogle.com/future-of-marketing/digital-transformation/cooking-trends-among-millennials/>].
- Caines R. Attitudes towards Cooking in the Home - UK- 2021: Mintel; 2021 [Available from: <https://reports.mintel.com/display/1048611/>].
- Pilkington A. Attitudes towards Cooking in the Home - UK - 2023 2023 [Available from: <https://reports.mintel.com/display/1154779/7highlight>].
- Food Standards Agency. How to cook your food to prevent food poisoning 2018 [Available from: <https://www.food.gov.uk/safety-hygiene/cooking-your-food>].
- Morrison E, Young I. The Missing Ingredient: Food Safety Messages on Popular Recipe Blogs. Food Prot Trends. 2019;39(1):28-39.
- Food Standards Agency. Advice on how to clean effectively in the kitchen and prevent harmful bacteria from spreading onto food. 2020 [updated 18 May 2020. Available from: <https://www.food.gov.uk/safety-hygiene/cleaning>].
- National Health Service (NHS). How to wash your hands 2023 [Available from: <https://www.nhs.uk/live-well/best-way-to-wash-your-hands/>].
- Food Standards Agency. Cleaning 2020 [Available from: <https://www.food.gov.uk/safety-hygiene/cleaning>].
- Centers for Disease Control and Prevention. Fruit and Vegetable Safety 2022 [Available from: <https://www.cdc.gov/foodsafety/communication/steps-healthy-fruits-vegies.html>].
- Food Standards Agency. How to chill, freeze and defrost food safely. 2020 [Available from: <https://www.food.gov.uk/safety-hygiene/chilling>].

Results

Content analysis of chicken salad YouTube video recipes (n=38) was performed to assess the verbal and visual communication of food safety practices. Further, the visual communication was evaluated from online chicken salad recipes (n=40) from ten UK-based supermarket retailers. Findings indicated that the provision of food safety information in YouTube video recipes was occasionally present but was generally lacking and, sometimes, incorrect (see Table 1). There was no best practice advice highlighted in online retailer recipes, but there were no inadvertent malpractices found either (see Table 1).

Table 1. Food safety practices highlighted by the 'Safe Recipe Style Guide' as visually and verbally observed in YouTube video recipes and visually communicated in online-supermarket recipes.

SAFE RECIPE STYLEGUIDE	Food Safety Practices	YouTube Recipes (n=38)		Online Supermarket Recipes (n=40)	
		Best Practice (%)	Malpractices (%)	Best Practice (%)	Malpractices (%)
Temperature	Cook until internal temperature reaches 75°C (167°F) on food thermometer	19	11	0	0
Hand Washing	Wash hands with soap and water (at beginning of recipe)	0	0	0	0
	Wash hands with soap and water (after each touch of raw poultry or eggs)	0	26	0	0
Cross-contamination	Wash equipment and utensils after touching raw poultry or eggs	3	16	0	0
	Do not reuse marinades used on raw foods	5	0	0	0
	Do not rinse raw poultry or meat	95	5	0	0
Produce	Gently rub produce under cold running water/ Scrub firm produce with a clean vegetable brush	3	0	0	0

Temperature

When cooking high-risk ingredients, such as poultry, adequate time and temperature result in the reduction of bacteria, reducing the risk of foodborne illness¹⁰.

Subjective indicators, such as colour, are not always an appropriate way to determine food safety¹¹ (see Figure 1).

- 19% of YouTube recipes (Table 1) included either visual or verbal best practices related to temperature. However, there was no demonstration of the appropriate use of a temperature probe.
- 11% of YouTube recipes included unsafe cooking practices, inadvertently promoting visual or verbal malpractice to the consumer (Table 1).

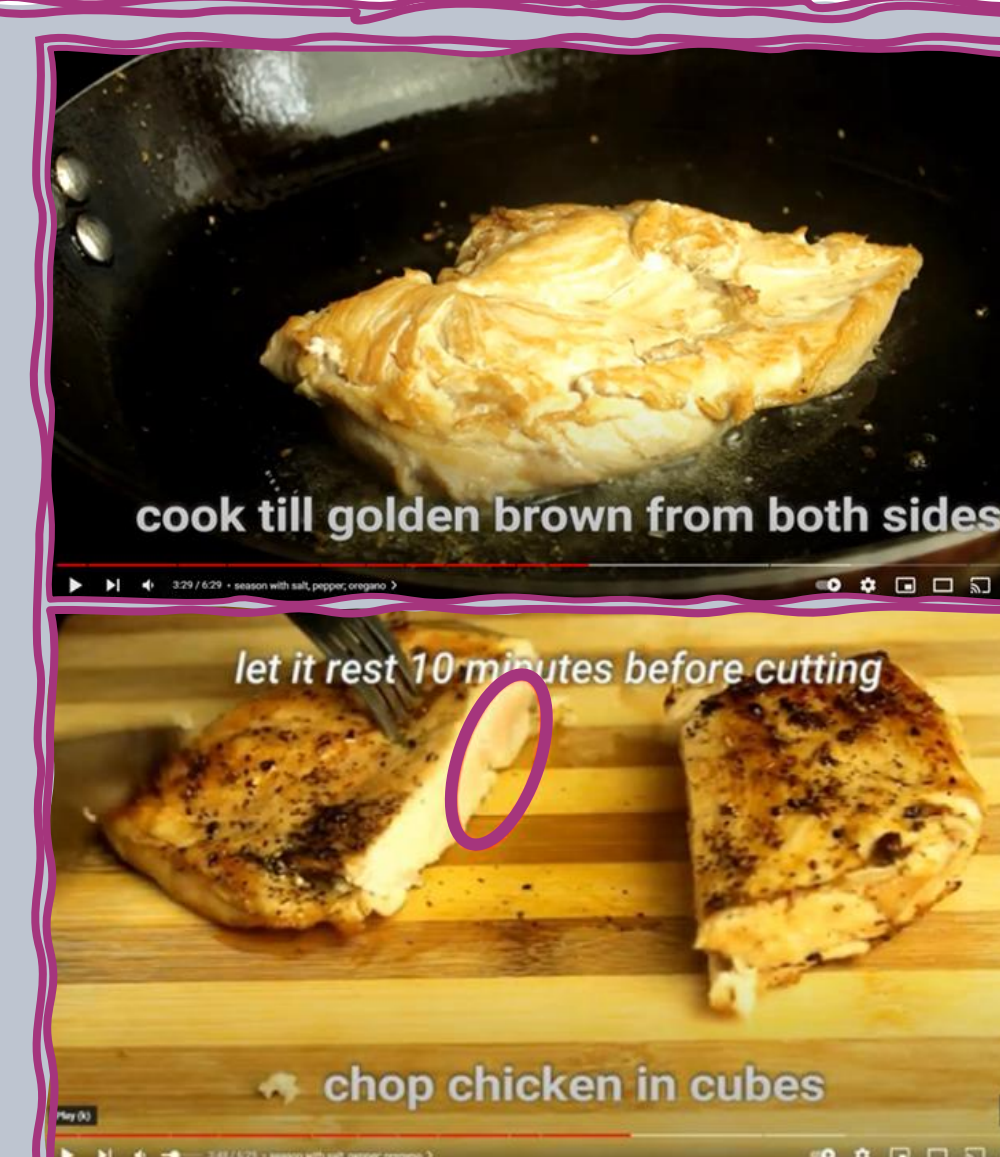


Figure 1. Examples of food safety malpractice. Circle denotes visibly undercooked chicken.

Cross-Contamination

Cross-contamination occurs through the incorrect handling of foods, equipment and utensils allowing the spread of harmful bacteria¹². The risk of spreading bacteria can be reduced by using separate utensils and equipment for raw and RTE foods, or between use¹².

- Overall, cross-contamination malpractice was found in 21% of YouTube video recipes (see Table 1). Figure 3, illustrates a chopping board used for raw chicken was wiped, turned over and wiped down with the same cloth.



Figure 3. Sequence related to potential cross-contamination of a chopping board during food preparation.

- 5% of videos demonstrated or referred to rinsing raw poultry before cooking (see Figure 4).



Figure 4. Examples of YouTube video-recipes promoting the malpractice of rinsing raw poultry.

How to cook meat safely
Don't be misled by cooking meat: we've got all the information you need to know to be able to cook meat safely and still achieve delicious results. Find out how best to cook and store meat with these helpful tips.

1 Don't wash meat
We may have read in cookbooks or been told by our grandmother to wash poultry or meat before preparing it but in fact this is one of the worst things you can do. When you wash meat and poultry, water can splash onto surfaces spreading bacteria around your kitchen, including those that may cause food poisoning, yet 60% of us still do it.

Although none of the supermarket website recipes included any food safety information, one supermarket included a hyperlinked statement on each recipe "For top tips on protecting you and your family when preparing raw meat and poultry, visit Food Safety in the Home". This dedicated section provided comprehensive information relating to the safe handling of raw poultry and how to cook meat safely. As indicated in Figure 5, it specifically referred to not washing raw meat and poultry, and 'why'.

Figure 5. Dedicated food safety information section provided by one UK-based supermarket website.

Hand Washing

Handwashing effectively reduces the risk of harmful bacteria spreading and being transferred onto food, and kitchen utensils and other equipment¹². Recommended handwashing procedures include the use of soap and hot water, rubbing palms, fingers and the back of hands¹³.

- None of the recipes included best practice handwashing at the start of recipe preparation (Table 1).
- Only 8% of YouTube recipes visually demonstrated handwashing after handling raw chicken but none of the demonstrations was the best practice (Table 1) (Failure to wash hands illustrated in Figure 2).



Figure 2. Inadvertent malpractice relating to contamination of the salt well after handling raw poultry and subsequently not washing hands.

Produce

Handling produce is an important aspect of food preparation as harmful bacteria can remain on the outside on fruits and vegetables¹⁴. The practice of washing produce is particularly relevant if the produce is to be consumed raw, such as a salad, where the cooking process is absent and will not eliminate any bacteria present¹⁵.

- Only 3% of video recipes used best practice when either visually or verbally communicating washing produce (See Figure 6 for example).
- Similarly to other food safety practices, online supermarket retailers did not communicate washing produce during recipe preparation.

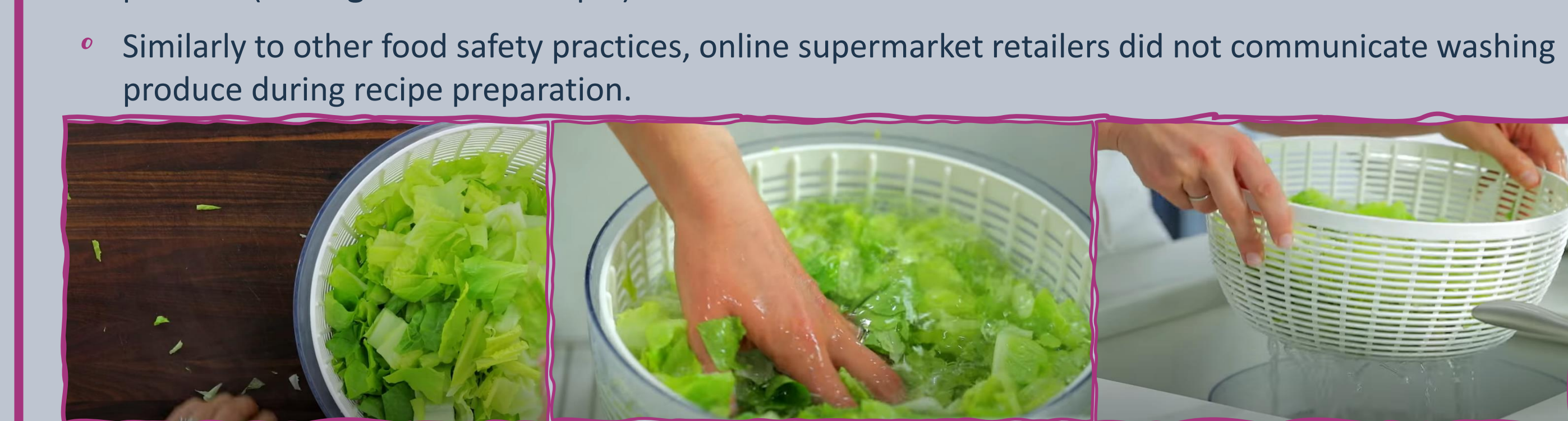


Figure 6. Recommended food safety practice related to the washing of produce under running water.

Refrigeration

The safe practice of refrigerating foods helps slow the growth of bacteria with recommended temperatures of ≤5°C (41°F)(16). This practice was not included in the 'Safe Recipe Style Guide' (3) and could be relevant to communicating important food safety practices in written or video recipes. Information detailing safe refrigeration was lacking in both YouTube video recipes and online supermarket recipes.

Significance

- This is the first study to utilise the PFSE 'Safe Recipe Style Guide' as an evaluation tool. Findings suggested inclusion of 'refrigeration' could be implemented into the 'Safe Recipe Style Guide'.
- Findings indicated that the provision of food safety information on YouTube video recipes are inadequate and lacking in detail and, occasionally, promoting food safety malpractice.
- Evaluation of online supermarket retailer recipes indicated that there was no provision of food safety information to the consumer in recipes, however one supermarket provided a link to food safety information.
- This study could be replicated for further research conducting content analysis for other forms of increasingly popular social media such as TikTok.